AMERICAN BEE JOURNAL

DECEMBER, 1916

Snug for Winter. Double Walled Hives With Tops Packed With Leaves.
Apiary of E. J. Baxter, of Illinois

American Bee Journal

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[Signed] M. G. DADANT, *Manager.*

Sworn to and subscribed before me this 2d day of October, 1916.

[SEAL.] T. R. KLAY, *Notary Public.*

My Commission expires Mar. 25, 1919

How About Next Year?

The season of 1916, just closed, has been a most unusual one. Beekeepers who did not fortify themselves early in the season by securing their hives, sections and other goods and having their equipment ready for the bees, found when the honey season was upon them that they were up against the following conditions:

Everybody wanted bee goods—dealers had depleted stocks on account of the unusual demand —manufacturers were several weeks behind on orders—their factories were working overtime, some beekeepers were delayed, some disappointed, some got their goods when it was too late.

Now, Mr. Beekeeper, What are You Going to Do About Next Season?

Prospects for a big Bee and Honey Season next year were never better than they are right now. PREPARE!! Order your goods this fall. Write us or our dealer nearest you for a list of new prices, owing to advances in raw material.

If you are not on our mailing list, write us at once and we will send you a catalog containing name of the distributer nearest you, and in this way you will also be sure to receive a copy of our new 1917 catalog when it is issued.

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Hives and Sections and all other goods are made from the best material and are scientifically manufactured.

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We absolutely guarantee our goods to be perfectly manufactured of the best material for the purpose. On examination, if our goods are not as represented, we do not ask you to keep them. Return same at our expense and we will refund your money, including any transportation charges you have paid. If you purchase our goods from one of our distributers, the same guarantee holds good, as we stand back of them.

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AMERICAN BEE JOURNAL

Vol. LVI.—No. 12 HAMILTON, ILL., DECEMBER, 1916 MONTHLY, $1.00 A YEAR

HABITS OF THE WAXMOTH

Facts About the Pest Which is Most Feared by the Beginner and Most Easily Controlled by the Expert Beekeeper

HOW often it happens that the thing which we most fear when viewed from a distance proves to be the source of little anxiety on closer acquaintance! It is just so with the waxmoth. It seems to be the pest which is most feared by the beginner and the novice, and which is most easily controlled by the expert beekeeper. In the four years which the writer has spent as a bee-inspector, he has visited dozens of apiaries where the bees receive no attention further than to put on supers in spring and to remove them in the fall. Such apiaries are subject to all the vicissitudes of short stores, queenlessness, disease, poor wintering, and the hundred other things that may befall neglected bees. When the bees die from any cause, the waxmoth enters the hive, as a matter of course, and shortly the combs are destroyed. The unfortunate owner then charges all his loss to the moth. Time and time again has the writer been told of losses from this cause, often the last colony having been removed, disgracing its careless owner, who is entirely unworthy to be called a beekeeper.

The presence of waxmoths indicates one of two things, either carelessness or ignorance on the part of the beekeeper. The best beekeepers at times find moths in a weak colony which has been overlooked in the rush of the season, or possibly in a super of extracting combs which have remained unprotected for too long a time. This can be charged to carelessness. The novice often fails to recognize the symptoms of queenlessness, disease or other abnormal conditions until the colony has become weakened to the point where the moths take possession, hence he lays all the trouble to the moths, when the moths are an indication of some disorder which was present previous to their coming, rather than the real cause of the disaster to the bees. In short, the presence of waxmoths is an indication of poor beekeeping.

LIFE HISTORY OF THE PEST.

Figure 1 shows the adult moth, life size. As will be seen by the picture, it is a grayish moth or miller with little to distinguish it from hundreds of other moths, whose larval stages are very different.

Moths, in common with butterflies, beetles, bees and many other insects, pass through four stages in completing their development, or what is called the complete metamorphosis. The first stage is the egg. The second stage is the larva, and it is during this stage that the damage is done to the combs within the hive. The third stage is the pupa which is passed within the cocoons shown at Fig. 4. The fourth and last stage is the mature moth, shown at Fig. 1.

The moths are quiet during the day and fly at night. The female will slip into the entrance of the hive, or any crevice that chances to be open. The eggs are laid in crevices about the hive, behind the division-boards or other out of the way corners, where the newly hatched larvæ will find easy access to the combs. The mother moth seeks a protected situation for her eggs, and glues them firmly to their resting place. A single moth will lay hundreds of eggs, extending over a period of a week or more. When first hatched the larvæ are very small and white. They burrow at once into the combs and, as they increase in size, will make such tunnels through the combs as are shown at Fig. 2.

FIG. 1.—ADULT WAXMOTH

Probably hundreds of eggs are laid in nearly every beehive in the temperate regions of North America every summer, yet the finding of a well grown moth larva in a strong colony is not common. The bees either remove the eggs, or drive out the worms shortly after they are hatched. The moths are so very prolific that when they get a start, the colony is doomed, since the bees are unable to remove them from their webs, once they become established. The moths feed as much on the pollen stored in the cells as on the wax from which the combs are built. New extracting combs that have never been occupied for brood-rearing are not very attractive to them, and will not be destroyed as long as old combs are within reach.

Figure 3 shows the larvæ, which are repulsive white caterpillars, in their burrows in the combs. The length of time required to complete the larval growth varies from 35 to 45 days depending upon weather conditions or season, according to Prof. Paddock who has studied the habits of the insects closely. The larvæ are about an inch in length when they reach maturity and are ready for spinning the cocoons.

Figure 4 shows a mass of the cocoons along a top-bar. The cocoons are fastened in masses between the top-bars, under the cover, or in any easily reached situation which offers suitable protection. In warm weather the

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change from a larva to a mature moth takes place in about two weeks.

In warm climates the insects probably breed with little interruption, while in the north there are several months when their work is checked. They are sensitive to cold and combs exposed to severe freezing will be free from waxmoths in the spring. Such individuals as find a crevice near the cluster of bees survive the winter, and renew the cycle the following season.

These insects have a very wide range and may be found nearly everywhere in Europe or America where bees are kept, excepting in the high altitudes of the West. When the writer visited Denver a few years ago he was informed by beekeepers there that the moths did not seem to survive in that climate. Although several times introduced, they soon disappeared. It is fortunate for the beekeepers of Colorado and other similar altitudes that they have one less source of irritation.

The writer is inclined to regard the waxmoth as a blessing in disguise, for it certainly tends to discourage careless beekeeping. A set of good brood-combs is worth at least two dollars, and it stands the beekeeper in hand to look after weak or queenless colonies to prevent the moths from destroying them. If left undisturbed, the moths destroy the combs entirely so that nothing remains but a mass of webs and the casts of the larvæ. Even the frames will be so badly eaten by the larvæ in spinning their cocoons that they are of little value.

CARE OF COMBS, ETC.

It is seldom safe to leave extracting combs exposed for any length of time. As soon as possible after the honey is extracted the combs should be returned to the bees, unless freezing weather is at hand. If for any reason it is not desirable to return the combs to the bees at once, they should be exposed to fumes of bisulphide of carbon in an air-tight room. Care should be used that no lighted lamp or other flame comes near, as the gas is very explosive. Some beekeepers have a tight room lined with building paper for storing combs. They are kept in the supers and piled up six or eight high, and a sponge or cloth saturated with the bisulphide of carbon placed on top of each pile. The door is then shut and the combs allowed to remain until needed for use. The drug effectively destroys any moths that may be present, and the tight building prevents adult moths from again laying eggs in the combs.

Another and very cheap method of destroying the moths in a room consists in burning brimstone. This material is sold by druggists in properly prepared packages supplied with a wick in a small metal dish, and the only requirement is to place it in some safe position over a plate or crock containing water and burn enough of it to kill the flies in the room. The room of course must be made as air-tight as possible, or the fumes of the burning brimstone would evaporate without killing the moths and their larvæ. As the eggs will not be destroyed by these methods of asphyxiation, it is well to repeat the dose after a few days. There is no danger of explosion with brimstone, the only requirement being to avoid setting anything afire, and that is why we recommend placing the burning brimstone over a dish of water.

Most beekeepers make a practice of leaving all extra combs on the hives until October. Even though there are two or three sets of empty combs above a strong colony of bees, there is little danger that they will permit the moths to injure them. When they are removed to prepare the bees for winter, the cold will prevent later injury, and if they are kept in a moth-tight room until needed the following season they will be safe.

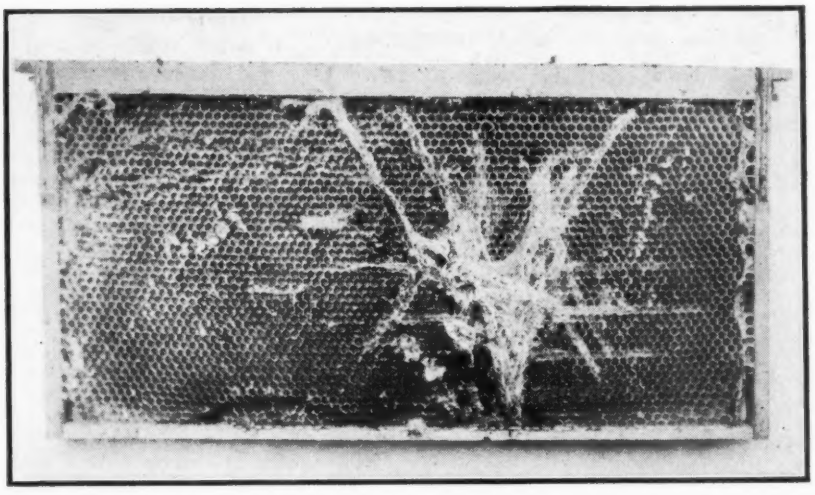

FIG. 2.—TUNNELS OF THE WAXMOTH IN AN EXTRACTING COMB

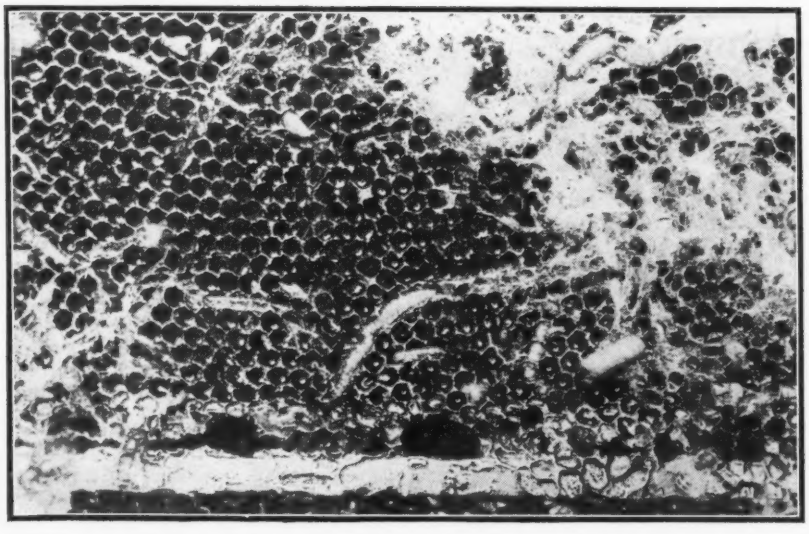

FIG. 3.—THE LARVÆ ARE REPULSIVE WHITE CATERPILLARS

Selling Honey—What Points to Emphasize

BY E. M. COLE.

FOR 22 years my constant study and recreation has been the busy bee. It was during these years that I learned just how to spread brood to the greatest possible extent, with the least possible danger to the brood, and the smallest possible amount of manipulation, but until the last three years I had never paid much attention to the commercial side of the business.

Now beekeeping begins to appeal to me as a splendid vocation as well as a recreation. I have increased my apiary until with fair wintering and an average honey flow, the disposal of a crop will be a live question. I have thought and planned considerably on marketing, and with the ideas gained from the sale of my small crops the past two years, I think I can offer some help on the subject, especially on local sales.

An effort is being made through the domestic science classes in our schools, to encourage the use of honey in baking, and this may lead to the use of a large amount of honey in the aggregate, but only a comparatively small amount locally. Another opportunity along this line, which might increase the aggregate sales, is its use in pancakes. The sale of prepared pancake flour has reached enormous proportions, and on each package is a recipe for making, which usually advises the use of a spoonful of sugar or molasses

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to make them brown. No doubt those who are directing the campaign for the greater use of honey, could induce the makers to include honey in the recipe.

Another chance for increased sales is through the people who are constantly on the road giving demonstrations in all kinds of baking. A baking powder crew was here this summer and drew a crowded house every day for a week, and I know there was an instant demand for every article they used in their recipes, but not one recipe called for honey. One of their number informed me that the matter had been taken up at headquarters, and no doubt they would be instructed to use a honey recipe. These things may greatly increase the general use of honey, but I want to dispose of my entire crop locally, and I think I can solve the problem.

Considerable has been written about the value of honey as a food for children, but I think a little inquiry will convince you that most children are not very fond of honey, and their appetite for it is quickly satisfied; it doesn't furnish the growing child with the elements it most needs, something for growth of bone and muscle. The one person to whom I believe honey is of the most value as a food is the hard working man or woman who has reached or passed middle age. I believe there is a sound reason for this, and it is with this class of customers that I believe the local market for extracted honey, if offered them at a fair price, may be enormously increased.

People at this age have lost some of their power of recuperation; their digestion is not what it once was, and digestion as well as labor is a tax on their energy. For them honey is one of the best foods; it is easily assimilated, and with so slight a tax on the digestive organs, furnishes them with what they most need, force or energy, and heat, and they soon acquire what almost amounts to a craving for honey. They might see it on exhibition every time they enter a store and not be inclined to buy, and I believe as a sound business principle I would rather give them a 5-pound pail of honey to get their appetites started than to sell an equal amount to a domestic science class or demonstrating crew.

Another point: If you live in or near a community of foreign born people, pay them special attention and you will find them your best customers; they are usually familiar with and appreciate extracted honey, and often prefer the darker grades.

[The foregoing article has excellent suggestions. There is an increase in the demand for honey, evidently due to the increased advertising by the beekeepers generally. The leaflet, "Facts About Honey," which is being given away in tens of thousands to the consumers, is helping greatly. This agitation should be continued until honey becomes a staple and an article of daily consumption.—EDITOR.]

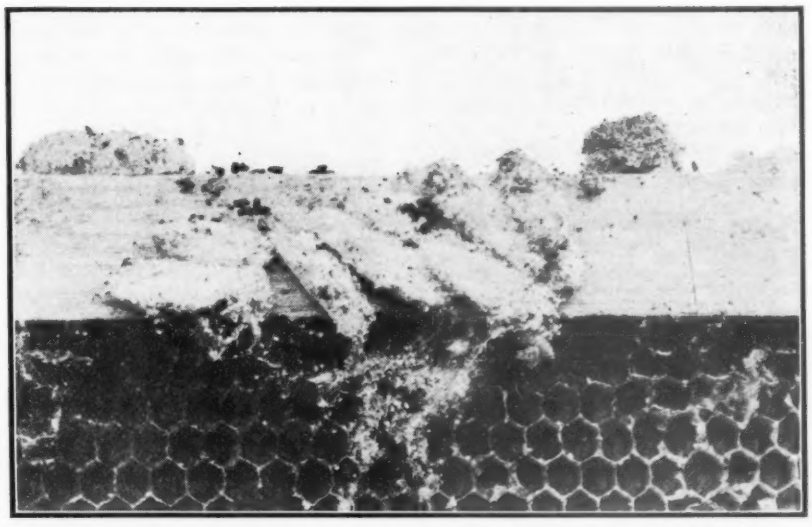

FIG. 4.—THE COCOONS ARE PLACED BETWEEN THE TOP-BARS AND UNDER THE COVER

The Action of Naphthalene on Insect Life

BY A. F. BONNEY.

LAST season I found that naphthalene repelled insect life (moths) from hives, and that it seemed to kill the moth larvæ, but I was puzzled to find that the bees were, or seemed to be, immune, that a strong odor of the drug would not drive them away from honey or injure them. An editor jumped to the conclusion that naphthalene will not kill bees, notwithstanding that it is reputed to be "deadly to most insects."

This season I took the first opportunity to investigate. I find that bees, the wax moth, flies, and some beetles shut up for a time in a place where the odor of the drug is persistent, will surely die, but allowed to come and go, bees will fly about a hive in which there is a smell of naphthalene and live.

Now the philosophy and toxical chemistry of the matter is this: Naphthalene is quite volatile, and the warmer it gets the more of the drug there is suspended in the air. Insects shut up with the stuff will become covered as soon as the interior of the box cools, even the inside of the breathing tubes will be coated. This means death. In the same way the worms and cocoons are covered, the poison is absorbed and the insect dies. I thought there might be a mechanical effect, that the insect was coated with an air-tight cover of the drug, but this is not likely.

Its repelling property is, I think, due entirely to its odor, and coal tar creosote, formaldehyde or phenol would give the same result. Bees will fly freely in quite a strong odor of the bisulphide, as others have, no doubt, noticed.

That naphthalene will kill the moth larvæ I now have no doubt, and I keep some in all stacks of hives. A handful of the powdered stuff is all right, and will make a very dense atmosphere.

Buck Grove, Iowa.

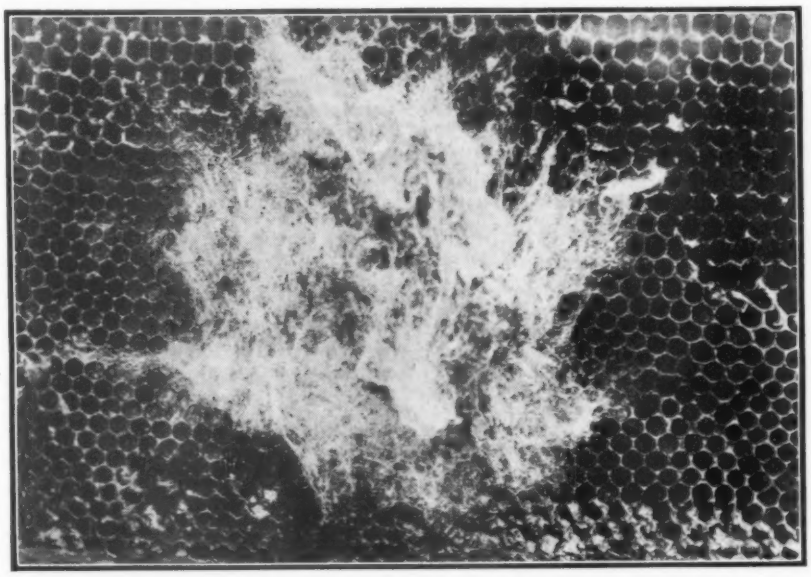

FIG. 5.—IF LEFT UNDISTURBED, THE COMBS WILL BE ENTIRELY DESTROYED AND NOTHING WILL REMAIN BUT THE WEBS OF THE WAXMOTH

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C. P. Dadant, Editor
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IMPORTANT NOTICE.

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THE WRAPPER-LABEL DATE indicates the end of the month to which subscription is paid. For instance, "dec16" on your label shows that it is paid to the end of December, 1916.

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THE EDITOR'S VIEWPOINT

Texas Honey Producers

Another step was taken Oct. 21 in the organization of the association of Texas honey producers. About 17 counties were represented and about $9000 of stock subscribed. They expect to get the full amount of the $25,000 subscribed by Jan. 1, when they will obtain their charter. The organization is to be along the lines of the Citrus Growers' Association of California.

The list of directors and officers of this association has been given in our August number, page 265. At the October meeting "a committee was appointed to wait on members of the State legislature to influence that body to appropriate money for an apiary to be operated in connection with the State Experiment Station at College Station, Tex. The federal government will appropriate an amount equal to that set aside by the State for this work. The members of this committee are Henry Brenner, of Seguin; T. P. Robertson, of Bartlett, and B. I. Gilman, of Pearsall.

"Considerable data was submitted at the meeting to show the vast possibilities for the expansion of the honey-producing business in Texas. It was brought out by figures submitted by local beemen that nearly $200,000 worth of honey of this year's crop has been sold in San Antonio's trade territory alone, and that Texas honey is being bought not only by all of the largest cities of the north and east, but by Europe and South America."

It is to be hoped that the beekeepers of the State will unite to help this move along.

Apples Next

Sunkist oranges have been before the public for several years past. Meadow-Gold Butter has received national advertising. In a recent issue we told of the tremendous campaign that the dairy interests are about to undertake. Now the announcement comes that the apple growers of the Pacific northwest will undertake a national campaign of advertising for their apples, which will be marketed under the name "Skookum" brand.

We are looking for an association of beekeepers who will follow the lead of the orange growers, the dairymen and the apple raisers. It is said that the apple men first tried a preliminary advertising campaign in New York, expending $15,000 there with such encouraging results that they have subscribed $50,000 for a national campaign to popularize Pacific coast apples. It would seem that New York apples must be equally good, and thousands of barrels of fine apples are grown within a few hours' ride of New York City. In spite of this fact the men from the Pacific coast are shipping apples thousands of miles and getting the cream of the market under the eastern apple grower's nose.

It will not be possible to advertise honey nationally by volunteer subscriptions. Such a campaign is only possible when organized on a business basis. An association of beekeepers with honey to be sold under an association brand, with each beekeeper to contribute to the advertising cost in proportion to the amount of stock which he holds in the association can make it go. Every man who contributes to such an advertising campaign will profit by the increased price which his honey will bring as a result of the demand for the particular brand of honey which the advertisements have called to public attention.

If such advertising did not pay, the Root Company would not continue to increase their advertising appropriation. There is no question but that their advertising is helping the general market for honey while at the same time making a profit for the Root Company because of the increased demand for Airline products.

Seventy Years of Beekeeping

It is doubtful whether our younger readers appreciate how much progress has been made in the honey-producing industry during the life time of men still active in the pursuit. Our senior editor, C. P. Dadant, has spent nearly all his life in a beekeeping atmosphere. His father, the late Charles Dadant, was an investigator who became well known on both sides of the Atlantic, and whose writings have been translated into several languages. As a young man our editor was associated with his father in honey production, and assisted him in the many experiments which he conducted in his efforts to make beekeeping a practical business.

We feel that a review of the development of beekeeping during the past 70 years, by one who has kept in such close personal touch with the men who have been actively engaged in it, and who has spent a life-time in practical apiary work, should be of more than ordinary interest. A series of five articles covering the subject will begin in the January number of this Journal. We believe that our younger readers will find this series both interesting and helpful, and that our older ones will recall many a bygone day in reading it.

F. C. P.

Southern-Bred and Northern-Bred Queens

The question is frequently asked, "Are southern-bred queens as hardy as northern-bred?" It is well known that in general each region has plants and animals adapted to its particular climate and locality, and those of tropical regions do not well endure the rigors of the far North. So it is natural to suppose that bees in the South become less hardy. But characteristics do not change over night, and if bees become less hardy in the South it would be only through a long course of years. Even if a southern breeder should have stock that had been bred in the South for a hundred years, if there was any suspicion that it had become less hardy, it would be the work of a few weeks at most to have that stock entirely changed through getting one or more queens from the North.

So the usual reply that queens reared in the South are just as hardy as those reared in the North may be counted correct for all practical purposes. [In addition we may say that the Italian bees, which are hardy, are from a coun-

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try with a warm climate. It freezes but little in any part of Italy, and the climate is certainly less severe than that of Texas.—EDITOR.]

The beginner is generally puzzled to know whether to choose goldens, bright 3-banded, or leather-colored. Let it be distinctly understood that all goldens are not exactly alike, neither are all leather-colored. The three kinds mentioned are all Italians, and they all vary. So a man may have a colony of goldens and a colony of leather-colored, and the goldens are the better of the two, while another may find that his own goldens are not so good as his leather-colored. The matter of looks has no small bearing, and breeders find that other things being equal the brighter the color the better customers will be pleased. Yet a large proportion of experienced producers of honey seem to prefer the leather-colored, with the belief that in general these rank as the better honey-gatherers. C. C. M.

Bees and Fruit

The "American Fruit Grower" in October, page 34, has this to say about the usefulness of birds and bees:

"Do you know what the birds and bees do for horticulturists? Here are hints. In Massachusetts, it is estimated, that the birds eat 21,000 bushels of injurious insects daily. In Tennessee, an orchardist writes: 'I have noticed that when a fruit tree was in bloom, during a damp, cool spell of weather, and the bees did not get to fly very much while the tree was in bloom, that the tree did not have very much fruit on it that year.'

"These States are mentioned because we happen to have the simple facts handy. The help of bird and bee is the same in every State. Are you taking advantage of this friendly service given by Dame Nature?

"Consider the bees, if you had to take a brush and fertilize all your fruit blooms, wouldn't it be a job? Yet here is the busiest spirit in the universe, whose whole social life, structure, and ideal, is to gather honey and pollen, thus carrying fertility to plants. Are you using the bees? Of course, wild ones will do their utmost, but why not have your own hives in the orchard?

"Of course we know, as you have already thought, that birds peck cherries, and bees sting grapes and apples, and hawks steal chickens. But Nature does not work perfectly. She needs help. Moreover, we doubt whether the damage done is one-tenth what these creatures save us. Last of all, it is a far easier task to protect fruit and seeds and chicks against bees and birds than against insects and mice."

Will the "American Fruit Grower" permit us—while applauding his wise remarks on the usefulness of bees for the fertilization of fruit—to protest against his statement that "bees sting grapes and apples." In the first place, if bees did "sting" grapes and apples, they would at the same time poison them, for the sting of the honeybee is so constituted that it emits poison whenever it is used. But perhaps our friend the "Fruit Grower," only means that bees bite or puncture the skin of those fruits with their jaws. If this is what he meant we call his attention to the fact that the mandibles of the honeybee are unable to cut the smooth skin of healthy fruit, for they are made of a smooth, horny substance which cannot pierce the skin of fruits. It is true that they tear cloth, paper and other similar articles, even tearing wood, when it is old and soft. But they do not cut these substances. They take hold of minute projecting particles and pull them until the texture is more or less lacerated. This may be readily ascertained if a string is placed within the hive. In a short time it is pulled to shreds. But the skin of grapes and apples is smooth and firm, and that explains why the bees have no means of perforating it. The damage is originally done by birds or wasps.

How do we know it? By experiment. Any one may try it. Place a bunch of perfectly sound grapes or a sound apple within a hive and examine it 24 hours afterwards. In some cases the fruit may be left for weeks and will remain uninjured if it does not decay. The writer has actually starved bees on a bunch of grapes.

The reason why so many people imagine that bees injure grapes is that, when the grapes have been punctured by birds, at daylight, the bees come later to gather the remnants. When the owner of the vineyard appears, the birds have flown away, but the little bees remain, without fear, and are accused of the mischief.

Freight Rates Again

In our June number we warned our readers that unless more care was used in packing honey for shipment the freight rates would be increased. However, we were not expecting such immediate action on the part of the railroads nor such a high rate as shortly went into effect in western territory. Beginning Sept. 1, comb honey was raised to double first-class rate in the western classification. This rate practically shuts the man in remote sections of the West out of the eastern market unless he is prepared to ship in carlots which carry a lower rate.

There was a very general protest and a hearing was arranged in Chicago for Oct. 26. At the urgent request of Iowa honey producers, who were affected by the new rate, Mr. Frank C. Pellett, our staff correspondent, was sent to Chicago to represent the Iowa beekeepers. Iowa is fortunate in having a State commerce counsel, whose duty it is to assist the shippers in that State in presenting such matters to the railroads and to the interstate commerce commission and other bodies having authority over rates. So Mr. Dwight N. Lewis, assistant counsel, of DesMoines, also went to Chicago to represent the Iowa people.

Prof. Francis Jager, president of the National Beekeepers' Association, made the trip several days in advance of the hearing, and did what he could to influence a favorable decision on the part of the committee, though he did not remain for the hearing. Mr. E. J. Baxter, president of the Illinois Beekeepers' Association, and Mr. J. T. Calvert of the A. I. Root Company, both were present at the hearing.

During the hearing it developed that there has been a very large amount of loss of honey in shipment during the past few months, and the railroads were compelled to raise the rates to enable them to pay the numerous claims for damage.

The Iowa shippers had a large amount of evidence to show that where shipments have been properly protected the loss was very slight, and this was borne out by the Root Company, who have shipped millions of pounds with very little damage. The committee seemed to wish to be entirely fair in the matter and agreed that the shipper who prepares his product for shipment in proper manner should not be compelled to pay the losses caused by the careless man. While it is possible that unprotected shipments will remain at the same rate, of double first class, the committee promised that they would make a distinction, and that when comb honey is packed in carriers with at least four inches of hay or straw in the bottom it will be given a lower rate. These carriers should be provided with handles so that they can be handled easily and a caution tag should be placed on top of the package. No single package should weigh to exceed 240 pounds. The reduced rate will go into effect when the next schedule is published which will probably be before Jan. 1.

Our readers who keep the files of their journals will do well to look up the June number and read again the article on "Getting Your Honey to Market." This matter of freight rates is a vital one, and unless the beekeepers pack their honey properly, freight rates will naturally rise to cover damages.

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AMONG EASTERN BEEKEEPERS

The Second of a Series of Articles by the Editor on His Trip Through a Portion of the East

EARLY in the afternoon of Aug. 3, Mr. and Mrs. Latham and I, accompanied by a neighbor beekeeper, started for Storrs, in the Ford. We arrived a little late, for the meeting was open.

Storrs is the Agricultural College of Connecticut, the site of which was donated by the philanthropist whose name it bears. It is away from either railroad lines or cities and has to be self-sufficient. The students are boarded and housed on the grounds.

The active and courteous president of the Beekeepers' Association, Mr. D. D. Marsh, of West Hartford, had already informed me by letter that they expected me to be the guest of the institution. The convention lasted until noon of the following day. The secretary, Mr. L. Wayne Adams, is a young man with as much energy as their president. Half a dozen live subjects were discussed, foulbrood of course, wintering, marketing, requeening, etc. Here friend Latham made a statement which was a revelation to me. While showing at the meeting a large hive which he calls the "let-alone hive," he made the statement that the ordinary spacing of frames, in the brood-chamber, of 1⅜ inches from center to center is the "*greatest promoter of swarming*." We have always succeeded better than the average in preventing swarming, and we have often given a number of reasons for our success. But here was one additional reason which we ought to have known and mentioned, for we use 1½-inch spacing in our brood-frames. We had never thought of the convenience and greater ease given to the bees by this additional ⅛-inch space between all the brood-combs.

If you go to the bees themselves, for information upon how far they wish to place their combs, you will have but little satisfaction. According to the best authorities, capped worker-brood needs but 34 millimeters, 1 11–32 inches, including the passage between the combs. But drone-brood requires 44 millimeters, or 1½ inches. If all combs could be kept exactly 1 11–32 inches from center to center, the bees could not rear both drone and worker brood; it would be necessary for them to leave the worker-comb empty, facing the drone-brood in order to have room for the sealing of this.

All beekeepers know how irregularly spaced the bees build their combs when left to their own devices. In some instances honeycombs are built two inches and more in thickness. So if we wish regularity, we must attend to the matter ourselves.

Regarding the usual spacing of frames, I will quote three authorities. Only one of them gives reasons for any particular spacing:

Quinby's "Mysteries of Beekeeping" says: "One and a half inches is the right distance for combs from center to center."

The "A B C of Bee Culture" says: "Some prefer 1½ inches, but the majority, supported by the best of reasons, prefer 1⅜ inches."

The Langstroth-Dadant "Hive and Honey Bee" says: "Greater spacing facilitates the taking out of the frames and aids in interchanging them. It gives more room between brood-combs for the bees to cluster in the winter."

And now here comes this statement of Allan Latham, which I consider of enough importance to write it again in capitals: "THE ONE AND THREE-EIGHTHS INCH SPACING OF COMBS FROM CENTER TO CENTER IS THE GREATEST PROMOTER OF SWARMING." This matter is worthy of consideration.

Another of friend Latham's ideas was brought out at the Storrs meeting. It is the use of lemonade as a cure for European foulbrood. The formula is 10 ounces of sugar, one lemon and half a pint of water for one colony. It appears that the difficulty lies in getting the bees to accept it. When honey is used in place of sugar, they take it more readily. It is not expensive. Try it yourself. Mr. Latham is a man of very forcible and convincing arguments.

(LATER—Since the above was written, I have received a testimonial in favor of the lemonade plan. Mr. S. Powers, of Wading River, N. J., writes me that he has tried the lemonade cure, as well as a modification of it, consisting of one ounce of citric acid to a gallon of sweetened water, and that he cured eight cases in six days. He says both plans are good.)

On wintering bees, a novel idea for me was given by President Marsh who uses a wire screen on a ½-inch frame over the combs, to give room for the bees to move from one comb to another. He places the absorbing cushions on top of this frame.

Dr. Burton N. Gates arrived at Storrs shortly after the opening of the first session. He was asked to give a demonstration in the apiary. A half-tone of this is shown here. The Storrs apiary, as will be seen, is on the edge of a piece of timber, in a very sheltered location.

At this meeting I met L. C. Root, whom I did not recognize at first, for he looked so much younger than the 75-year-old man whom I expected to find. But a successful operation, mentioned in February, page 47 of our Journal, has made a young man of him. He invited me to visit him and I later accepted.

DR. GATES DEMONSTRATING AT THE MEETING OF THE CONNECTICUT BEEKEEPERS' ASSOCIATION AT CONNECTICUT AGRICULTURAL COLLEGE AUG. 3, 1016—Photograph by J. H. Menter.

Returning to the home of Allan Latham in the afternoon of the 4th, accompanied by Dr. Gates, I enjoyed again their hearty hospitality, and the following morning we started for the meeting at West Boylston., Mass., a distance of about 65 miles.

To a westerner, accustomed to the orientation of every house, every field, every road, almost without exception in line with the cardinal points of the compass, the New England way of making roads or building houses in the most convenient position, without regard to the exact location of the North star, has a quaint character and a pleasing appearance, reminding one of European landscapes. Probably our

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western method of setting everything by the square, on a round planet, is due to the immensity of our fields and the fondness of the plowman for straight furrows. The average western settler is very deeply vexed if his new house proves to have been built a half degree out of the line. Many a western farmer recognizes the dinner hour by the direction of his furrow. We cut a hill in two with a road when it would be much cheaper, easier and better for all if we made the road around it. In New England, the roads take the easiest way, in a pretty, rounding curve, whenever occasion demands. The dwellings follow the curve as a matter of course. And such roads!! No mud, no loose stones, no steep inclines. New England is an elysian field for the "autoist."

Boat Landing, Beacon Park, Lake Chargoggagoggmanchaugagogg-chaubunagungamaugg, Webster, Mass.

THE BEAUTIFUL NEW ENGLAND LAKE WITH ITS UNPRONOUNCEABLE NAME

On the way, we passed a beautiful lake. (See cut.) Take a deep breath and pronounce slowly, one syllable at a time. If you can't succeed in spelling it out, go there and ask the natives. They have a charming way of reciting it, if you can stay long enough to hear it out. The Indians taught them how. The Indians are gone, but the echo of their voices remains on the beautiful lake. I am indebted for that picture to Mrs. Latham who was kind enough to forward it to me, with a charming little letter, after I had expressed the desire of securing it for publication.

At West Boylston, the meeting was held at the home of W. E. Parker, under the shade of fine trees, with a small apiary in the background. It was under the management of Messrs. J. S. Whittemore, of the Worcester County Association, and G. H. Cale and Benjamin P. Sands, of the Eastern Massachusetts Association. Hospitality was extended by the host in true New England beekeeper's fashion, to a crowd of about 100 practical beekeepers, among them Arthur C. Miller of smoke introduction fame, an original writer of wonderful ability and observing power. A number of the men present were old acquaintances by correspondence, persistent readers of the American Bee Journal, whom I had never met before. Did I name one of them, I should have to name them all.

A new and perfectly safe way of introducing queens was described by Mr. Crandall. He has a cage large enough to contain a frame of hatching brood. The bees are shaken off and the queen introduced in that cage with the comb which is placed in the center of the hive. In 24 hours or less the cage may be taken out. The queen begins to lay as soon as she finds suitable cells, and this insures her ready acceptance.

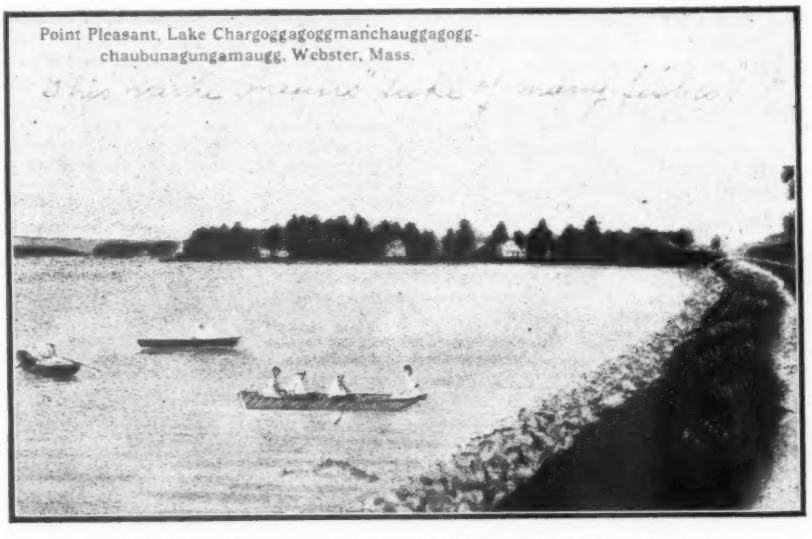
During a discussion of apiary grounds and removal of weeds, Mr. A. C. Miller suggested a sheet of "paroid roof paper" for ground covering under the bottom-board. A good grade of roof paper, like this, makes a cheap, firm and lasting stand, to keep the weeds down and the hive dry.

Here I met also a charming young lady who cannot be passed without a mention, Miss Josephine Morse, who gave a description of New England beekeepers' societies in our April number. Miss Morse was mentioned to me as having conducted a course of beekeeping during the past summer. I asked her for a synopsis of this for publication, and she sent me a very modest statement which the reader will find in the Woman's column.

In the evening of that day, I had to bid good bye, with regret, to the Lathams, who were going back home, while I continued my peregrinations with Dr. Gates, in his auto, a Franklin, a most excellent machine. But, laying aside all Ford jokes, the little Ford is ready for all emergencies, and at different times during the trip I rode in six different ones. We have four Fords in our family, and although it is true that the Ford will take you anywhere except in society, its society is good enough for me.

The evening of that day we spent at Worcester, with Mr. and Mrs. Gates, Sr. Mr. Gates is a retired lumber merchant. Meeting these two old persons gave me a clue to the excellence of their son. He is just as nice as he can be, but how can he help it? He has inherited it. And by the way, I call them old, but they are younger than myself; I take it back.

[To be continued.]



Point Pleasant, Lake Chargoggagoggmanchauggagogg-chaubunagungamaugg, Webster, Mass.

ANOTHER VIEW OF THE MASSACHUSETTS LAKE

Economy of Heat in the Hive

BY H. SPUEHLER.

DR. PHILLIPS has acquired the great credit of having deeply studied the question of temperature in the cluster of bees in winter. He has elucidated by his researches a subject which is very interesting, but which had been insufficiently known until then, and we owe him thanks as well as to the Department of Agriculture, which has given him liberally the means of succeeding.

It must not be forgotten, however, that many European beekeepers have long ago sought to discover the temperature of the cluster and that they had fixed it at 97 to 98 degrees for the breeding center. Mr. Kramer, a well-known Swiss apiarist, was the first man, to my knowledge, who 25 years

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ago solved this question by the use of some 70 thermometers placed in the winter in different parts of the hives. His results agree in general with those of Dr. Phillips, but he became convinced that his conclusions could not be quite exact on account of the disturbance produced by inserting or removing the instruments, and for that reason he did not publish his investigations. But he solved another question, that concerning the relation between the entrance and the colony temperature, in winter. He selected 50 hives, half of which were allowed an opening of 200x15 millimeters (8x⅝ inches), and the other half 50x8 m.m. (2x5-16 inches). Each entrance was supplied with a thermometer and the temperature noted each day, morning and evening. The result was entirely in favor of the large opening. According to this experimenter the large opening produces the following advantages:

1. The unhealthy contaminated air from the breath of the bees is not retained.
2. The combs remain dry.
3. The bees are quieter.
4. The stores, whether sealed or unsealed, remain healthy.

In addition to this, the French savant, Gaston Bonnier, made experiments, to ascertain whether, to economize the heat of the colony, it was better to use a dummy-board or whether a dry comb would render the same service. He found no difference between the two. This should not astonish us, since the illustrious Tyndall has recognized that beeswax is the most impervious substance to radiating heat.

According to Dr. Phillips, the temperature of the brood-nest is between 95 and 97 degrees, but if there is no brood, it may go down to 57 degrees, providing the outside temperature does not go below that point. As soon as this happens the temperature of the cluster rises because the bees, inconvenienced by the cold, draw towards the center. The colder the weather becomes the more compact the group, and while the outer bees fill the space between the combs, the other bees occupy the inner empty cells. In this way the bees on the outer edges form a dense covering for the protection of the colony against the cold. The greater intensity of the cold causes a diminishing of the size of the cluster which gets nearer and nearer to a spherical shape, this shape giving the largest possible capacity in proportion to its surface, and for that reason allowing the least deperdition of heat.

The cluster, being changeable at will, can readily adjust itself to the exterior conditions. If the temperature lowers, the surface of the cluster and the loss of heat both decrease; at the same time the cluster is more dense and the inner heat thereby increases, since there is less occasion for the heat to escape. When the temperature again rises, the cluster expands, and the heat again escapes more readily, thus lowering the inner heat. The dense covering of live bees is less compact and the outer air pervades the cluster more readily. That is the explanation of Dr. Phillips' observation, "When the outside temperature begins to rise the cluster temperature drops slowly.....only to be increased when the outside temperature again drops."

The following table indicates the enormous value which a condensed spherical cluster offers for the economy of heat in winter:

Combs	Surface in centimeters		Difference	Per cent
Reduc'n from 6 to 5	from 1465 to 1017		448	30.6
" " 5 to 4	" 1017 to 651		366	36 0
" " 6 to 4	" 1465 to 651		814	55 0

The cluster does not always form in exactly a spherical shape. Sometimes it is difficult for the bees to withdraw from one comb to another. The bees, however, withdraw from the outer combs, usually, early in the season, but assume the sphere shape only when the cold becomes intense.

The fact that the bees occupy not only the space between the combs, but the empty cells as well, and thus make the sphere as small as possible, indicates by what marvelously simple means Mother Nature provides the safety of the bees.

But why are the bees active within the cluster and thus increase the production of heat? Why are they less active when the temperature is high and more active when it is low? Are they informed of the need of activity to sustain their existence? I think not. The bees in the center of the cluster are warm and cannot realize the existing conditions of cold on the outer rim. But they *are in viciated air*, and the want of pure oxygen drives them to activity. They get rid of the foul air by action, night and day. It is the need of renewal of this air which compels them to act in more lively manner as the cold increases and the cluster becomes more compact and more impervious to an air current. *Air is needed and the entire cluster must be aerated.* In summer, air is needed to cool the inside of the hive and to help evaporate the honey. In winter a sufficient amount of air is needed to remove the breathed atmosphere and replace it with fresh oxygen. It is also necessary that the evaporating moisture be enabled to escape so as not to annoy the bees or disturb their comfort.

The necessity of a compact cluster has been fully recognized as guaranteeing the life of the bees against extreme cold. But the relation between the production of heat and the consumption of honey has not been touched. The general idea is that this consumption corresponds to the increase or decrease of cold, that it increases with a lower temperature and decreases with the higher degree. But this is not exact. The daily weighing of colonies does not prove it. Here is an example:

Both the German and Swiss Beekeepers' Associations practice these weighings daily in the summer and every ten days in the winter. One winter the November and December weighings showed the following comparative consumption and temperature:

Nov. consumption	Temperature	Dec. consumption	Temperature
140 grams	23.9	60 grams	18 9
70 "	21 2	60 "	21.1
310 "	24 8	110 "	15.8

November mean consumption, 173.3 grams; mean temperature, 23 3.
December mean consumption, 76.6 grams; mean temperature, 18 6.

The consumption therefore decreased while the temperature lowered.

It results from this that cold weather economizes the stores and becomes the ally of the beekeeper. How can we explain this? We have shown that during extreme cold weather in the outer shell bees move but little, and this inactivity reduces the need of food consumption. They economize on their food because of the economy of their physical strength. In a mild winter it is the reverse. The flights are numerous and the stores disappear and diminish the hopes of the apiarist for the following harvest. The deduction we draw from this is that the beekeeper must see to it that his bees be disturbed as little as possible during the winter, for their benefit and his own.

Zurich, Switzerland.

[Our readers will remember our correspondent as the translator of Bertrand's "Conduite du Rucher" from French into German. Mr. Spuehler is not only a good beekeeper and a student, he is also a polyglot, since he reads and writes three or four languages. We mentioned our visit with him at Zurich, in our "Notes from Abroad" in September, 1914. He has contributed to our Journal several times, since.

The principal question upon which Mr. Spuehler insists is the increase of heat of the cluster caused by its greater or less compactness. A similar statement will be found in an article by Mr. J. E. Hand, a practical beekeeper who is well known to our readers, on page 305 of the September number.

Although Dr. Phillips, in the wonderful report made by him in Bulletin No. 93, shows that the cluster becomes more compact, with the decrease of temperature, he gives us to understand that the "source of the heat of the cluster must, of course, be the oxidation of the food consumed by the bees" (page 15). That this heat is better kept by the compactness of the cluster is evident. Phillips also says: "That higher temperatures may be produced, greatly increased muscular activity is required.....bees fan to heat the cluster in winter as well as to cool the hive in summer."

But the explanation given in the above article, by Spuehler, that the bees fan within the cluster to secure pure oxygen "because the air is needed" within this compact cluster, must be correct.

A question which Mr. Spuehler raises is that of the connection between consumption and temperature. He indicates that the low temperatures require less consumption. We acknowledge that we have been and are still of a totally different opinion. Although Bulletin No. 96, on "The Temperature of the Colony," by our friend Prof. Burton N. Gates, of Massachusetts, shows that "the rate of consumption of stores exhibits relatively constant de-

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crease from month to month," Gates gives reasons for this which may have also been the reasons for this decrease mentioned by Spuehler. There is a notable lessening of the number of bees, and therefore of expenditure in stores not dependent upon the weather. Gates says that "when bees were more active and before settled winter weather, food consumption was greater than in midwinter." There is also as he reports a condensation of moisture increasing the weight of the hive while the stores decrease.

We are still of the opinion that, in winter, very low temperatures cause a great increase of consumption, over that of ordinary winter weather, because of the greater activity within the cluster. Although colonies are often "as quiet as death" during cold weather, when well protected, a loud humming is heard at times, from the outside.

On all these matters, it is well to say, as does Dr. Phillips, that "too hasty conclusions must not be drawn from the facts presented." More light is needed.

But on two things we are all agreed: The colonies must be kept as quiet as possible, especially in the coldest weather, and a sufficient amount of ventilation supplied. On this latter point we call the attention of the reader to the article by our able Italian correspondent, Mr. D. Barone, in the present number.

All the statements of these writers confirm the advice given by Mr. Langstroth years ago on wintering bees.—EDITOR.]

Influence of the National Beekeepers' Association

BY PROF. FRANCIS JAGER, PRES.

THE most pleasant feature of the annual gathering of the National Beekeepers' Association is the inspiration which one gathers from contact with the master minds of beedom. Were it not for these gatherings of the National there would be no chance whatever for the beekeepers of America to have the pleasure of seeing and hearing the leaders in our profession. We would know them only from their books and articles and hearsay. Still more unfortunate would be the fact that these prominent men would have no occasion to meet each other.

This personal contact with beemen we know so well is an everlasting source of inspiration, forcing one into thinking, planning, correcting, improving, and by making him realize his own weakness and ignorance stimulate him to better and more perfect things. The fact that beekeepers, like "birds of the same feather," flock together, would justify the conclusion that this experience is not an isolated, psychological phenomenon, or, in plain English, that beekeepers, just like the bees they keep, swarm once in a while and cluster in a bunch in a riot of mental pleasure and joy.

They tell a story about Tennyson and Carlyle. They used to visit each other to gather from each other's company new thoughts and inspirations for their literary work. Carlyle would call on Tennyson to spend the evening. They would move their chairs to the fire place, light their pipes and solemnly stare into the crackling logs, the dancing flames and curling smoke. Never a word was spoken for two or three hours. About half past ten Carlyle would rise to go, and shaking his friend's hand would say: "So 'long, Tenny, we have had a most delightful evening together."

And so they did. They were both better men for having had the visit. And if no word was spoken, who could describe the wealth of thoughts that passed through these men's minds during those three hours. Indeed, speech would have been an interruption, a profanation of the great work they were then doing.

Let us meet once a year in some part of the United States under the name of the National Beekeepers' Association in a circle of friends. It is true, we cannot keep silent for three hours at a time, but the influence is there just the same, and we return home better beekeepers and better men.

The National will meet next February at Madison, Wis., with Mr. N. E. France as host. For membership and information write to Eric Millen, East Lansing, Mich., secretary, and help to preserve the best we have.

St. Paul, Minn.

Wintering in Single-Walled Hives

BY D. BARONE.

IS it possible to winter bees successfully in single-walled hives? I say yes, and the problem is not so hard to solve as it might look like at the first glance. I foresee many a reader giving a reception of skepticism, and perhaps of good humor, to this assertion, since they have been so (badly?) influenced that in their opinion the ideas of good wintering and quadruple cases and double-walled hives and so on, can by no means be disjointed.

Yet, notwithstanding the ready opposition, plucking up my courage, I am going, in support of my thesis, to quote facts because I think facts always more convincing than the most elaborate reasonings, and because not being a

APIARY AT THE UNIVERSITY FARM, ST. PAUL, MINN., IN CHARGE OF PROF. FRANCIS JAGER

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scientist, I am not in a position to develop it with the assistance of scientific arguments.

During April, 1915, Mr. F. W. Pease, one of the most intelligent and extensive Iowa beekeepers, and myself went through his yards, the first visit in the opening of the then well promising season. In spite of the darkest predictions we found things going better than we expected. A number of strong colonies, the brood proportionate to that number, the queens fairly busy, and the honey, lastly, sufficient to sustain them until a fresh harvest. Mr. Pease told me that he never had bees in better condition in springtime. How did he manage to get such good results?

In July preceeding the extraction, we saved three full sealed combs of the best clover honey per colony (and this practice was a very opportune one, since the fall crop, unusually, was a failure). In fall we traded these combs with empty ones taken from the brood-chamber, united the weak colonies, put on queen-excluders, shallow supers full of dry leaves, and lastly wrapped the hives two by two with black tarred paper. That is all. Each colony was generously granted not less than 30 pounds of stores with the entrance ⅜ of an inch deep for the whole width of the hives.

The disposition of the combs in the hives plays a very important role for successful wintering. Suppose we intend to wrap the colonies in pairs, as in this case. We cannot put in combs with honey scattered here and there. The clusters move towards the warmer part of the hive, and, of course, on that side which is in touch with the next hive, we must set the full combs, leaving the lighter ones to fill the other end.

The advantages are obvious. Let us keep track of the slow march; in the middle of the winter the two clusters will be changed into a big one, divided only by the walls of the hives. The combs which the cluster does not cover serve as splendid insulators, as the exhaustive experiments of G. Bonnier assure us, so that under such an arrangement as we can readily understand, the production of heat will scarcely require half of the energies of the bees and no danger of starvation will be feared.

In April of this year, too, Mr. Pease assured me that the bees were getting along well. Hence, after such reliable and steady results we are led to freely recognize the requirements standing on steady and positive foundations, the rigid rules of hygiene graciously coupled with a fair economy. If such a management proved a positive success in Allamakee county, in the northeast corner of Iowa, why can it not prove equally successful all over the country? I feel unable to give the question a congruous answer. I do not wish, however, to be misunderstood. I am not trying to demonstrate that the double-walled hives, the quadruple cases, the tenement hives, the cellars, etc., cannot be a success for wintering. The more the better. But are they really and strictly necessary?

No one will find unworthy of praise, deep admiration and strong encouragement the accurate studies, the subtile and patient search, the diligent experiments on that matter. Both science and practical culture certainly make valuable gain by them. However, I feel justified with the comfort of positive facts and stringent logic, in saying that it is practically realizable to winter bees even without those expensive implements.

In reading through the interesting beekeeping literature, there arises in my mind the belief, possibly wrong, that too much is said about winter protection and too little, indeed, about adequate ventilation as condition *sine qua non*. Inadequate ventilation is a double threat to the health and welfare of the bees, and the stronger the colony the greater the danger. The slow and continuous reabsorption of the carbonic acid may cause even the death of the colony, besides inevitably bringing it to a pitiful condition.

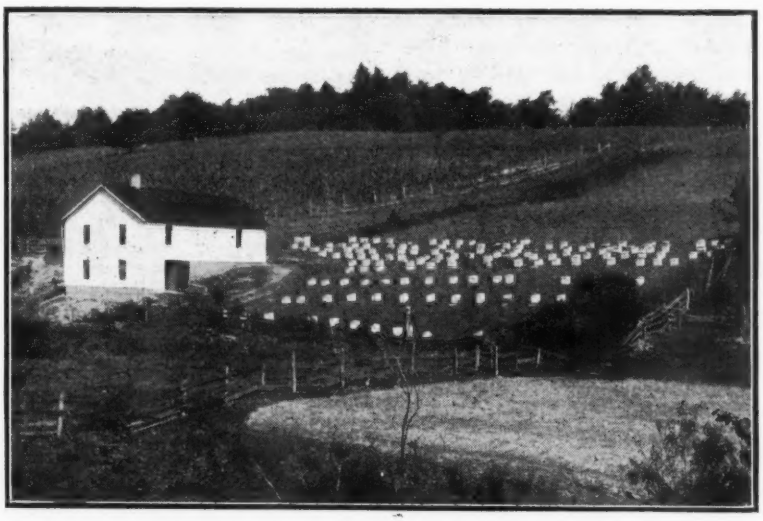
Given the very hygroscopic nature of the honey, the best stores, when no escape is left to the watery vapor, are liable to become the poorest, hence dysentery and dwindling. Therefore, I suggest that a good share of the heavy losses should be charged rather to either or both of these causes than to severe temperatures. Some disappointed beekeeper says within himself: "Perhaps I left the entrances too large and the bees froze in spite of the four inches of packing. Next fall I will be more careful."

The next fall, taught by the past experience, he still reduces the entrances so that, in his opinion, the wind and the snow cannot endanger the bees, and provides perhaps a supplementary packing; instead of four inches making it ten inches. In the following spring, with the support of honest conscience, he pays the first visit to his bees. Alas! what a sad surprise. The bees are in worse condition than ever. But what looks stranger to him is the apparently inexplicable fact that the weaker colonies last fall are those which have managed themselves better through the winter, while the stronger ones manifestly show signs of the most discouraging depletion.

The short entrance clogged with dead bees should speak to his intelligence clearing up the embarrassing puzzle. We should find the root of the trouble in the failure on his part to make easy the removal of the vicious air within the brood-chamber.

Apropos, this argument recalls to my mind the conflicting reports as to whether the aster honey was good for wintering. Now it seems a settled question that such honey is fortunately no longer considered dangerous. Why were those reports conflicting? Did the soil influence, according to the different localities, that kind of honey? Maybe and maybe not, but I am rather inclined to believe that the bees of the reporters were under unlike conditions in respect to the enunciated sound principles of hygiene.

Finally, with a sense of confidence we can axiomatically state that abundant good stores, strong number of bees, and young bees especially, pure and dry ambient, soundly linked together, are the essentials for winter protection. New York City.



HONEY HOUSE OF M. C. SILSBEE AT HARKINVILLE, N. Y.
Notice winter bee-cellar under the house, and convenient proximity of apiary to minimize moving costs in cellaring.

A Handy Bee House

BY M. C. SILSBEE.

MY bee-house is 24 feet by 40 feet north and south, the cellar being of the same dimensions. I have a partition through the cellar which shuts off the wintering cellar from the tank room; the wintering room is 24x30 feet, and the tank room 24x10. The outside door of the cellar is 4 feet wide, making a roomy entrance.

Above, my extracting room, is 24x30 feet with a 3½ foot door in the end of the building. The balance of the ground floor is made into a storage room. It is here also that I crate and clean such comb honey as I produce.

The floor is a double one of hard pine with building paper between with four trap doors 14x20 inches to aid in winter ventilation of the bees.

The cellar has a cement floor, and the walls are laid in cement and stone

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They are 3 feet thick at the bottom and 18 inches at the top.

In cellaring, 2 or 3 inches of planer shavings are scattered on the floor, then 6-inch timbers, on which the colonies are placed, with bottom-boards removed, which allow all dead bees to drop to the floor.

Cohocton, N. Y.

Some Prominent Ontario Beekeepers

BY MORLEY PETTIT, PROVINCIAL APIARIST.

MR. R. H. SMITH, of St. Thomas, was president in 1907. At that time Mr. Smith conducted an extensive bee business, exhibited annually at Toronto fair, and also made and sold beekeepers' supplies. Failing health, however, induced him to go to western Canada where he was still living at last reports.

The president in 1908, was F. I. Miller, of London. Mr. Miller is one of a number of successful users of Heddon hives in that district. He has worked out the principles advanced by the late Mr. Heddon, to their scientific conclusion, and has developed a system of apiary management by which he looks after several hundred colonies of bees with very little assistance outside of himself. His honey is all bottled and sold in high-class grocery stores throughout the southern part of the province. Mr. Miller does practically all of the bottling himself, acts as his own salesman, and so keeps himself busily engaged throughout the year, as well as keeping down running expenses.

During 1909 and 1910, Wm. Couse, of Streetsville, occupied the chair. Mr. Couse had become secretary in 1886, but because of more pressing duties in his business, he gave up the books in 1908, becoming president for the two following years. He is a successful coal, wood and feed merchant, keeping about 100 colonies on the side. His interest in bees is always keen, and every convention and official meeting of any kind finds him in attendance and ready with the advice which his years of experience enables him to give so well.

The president, in 1911, was W. J. Craig, manager of the bee-supply department of the Ham & Nott Co., of Brantford. Mr. Craig received his early training in this line of work while employed by the Goold Shapley & Muir Co., and was for a number of years editor of the Canadian Bee Journal.

During 1912 and 1913, the president of the association was Mr. Denis Nolan of Newton Robinson. Mr. Nolan comes from a family of beekeepers situated not very far from the old home of Mr. D. A. Jones. He was one of the first in Ontario to use a gasoline engine for running the extractor. A little later he purchased a Ford car for his apiary work, and was soon drawn into the Ford organization, becoming salesman for his district. While Mr. Nolan is still secretary of the Simcoe County Beekeepers' Association, his interest in bees is not so strong as it was, because so much of his time is taken up with the automobile work.

During 1914 and 1915, the chair was occupied by Mr. J. L. Byer, of Markham. Mr. Byer also comes from a beekeeping family, as his father and grandfather were beekeepers in Markham before him. He is now one of the most extensive beekeepers in the province, and with the assistance of his father and son, and other members of his growing family, he has upwards of 1000 colonies in different parts of the province. However, Mr. Byer needs no introduction to the readers of the American Bee Journal, having until recently conducted a department in its pages.

The present occupant of the presidential chair is Mr. F. W. Krouse, of Guelph. A few years ago Mr. Krouse gave up a job as day laborer at the Ontario Agricultural College to start market gardening, poultry raising and beekeeping. He has been successful in all three of these, but is gradually reducing his interests in the former two, so as to be able to devote his whole attention to the production and sale of honey.

Now of these men who have successively occupied the chair of the organization which has done so much for beekeeping in Ontario, all, previous to 1900, have joined the great majority except R. McKnight, of Owen Sound, who was one of the founders of the association; R. F. Holtermann, who was one of the earliest secretaries; Martin Emigh, A. Pickett, and M. B. Holmes.

Starting in 1880, the Ontario Beekeepers' Association has made a steady development up to the present. It would be impossible to enumerate all the benefits which Ontario beekeepers have derived from this organization. All legislation which we enjoy has been granted at its request. Under legislation we might mention the Foulbrood Act, which at present provides a substantial annual grant for apiary inspection and gives the inspectors complete power to find and control disease. The adulteration of honey is well looked after under the Pure Food Act of the Dominion, and bees are protected from poison by the improper spraying of fruit trees by an Act, which makes it illegal to spray fruit trees with any poisonous spray while they are in full bloom.

Beekeeping is taught at the Ontario Agricultural College. An experimental apiary is conducted there, and demonstrations are held throughout the province; all being under the supervision of the present writer who is employed by the government to give his

MORLEY PETTIT

ONTARIO AGRICULTURAL COLLEGE APIARY

The hives are set in double rows with room to set quadruple winter case in flat between

American Bee Journal

attention to the interests of beekeepers. The association receives the benefit of his services as secretary, besides getting an annual grant of money from the government to assist in carrying on its business. Having office facilities and time to devote to the interests of the association, he was able to interest beekeepers who had not previously been reached and thereby more than double the membership in one year. There are now between 1100 and 1200 paid up members.

Perhaps the most valuable service rendered to members has been the annual crop report and price recommendation, which has been given each year for the last 13 years. This has done much towards stabilizing the honey market. In conjunction with this, the secretary is often able to bring buyer and seller together, and in 1913 when the crop was unusually large sold about 75,000 pounds of honey for members of the association.

Another service provided by the secretary, which is used freely by members is the purchase of queens for improvement of stock. By this the small order receives as prompt attention as the large and at the same price. Orders which might otherwise be sent to a breeder who was behind with shipments are diverted to men who have equally good stock and are known to be filling orders promptly. Thus the secretary's office becomes a clearing house for queen orders and the member not only gets prompt delivery, but good stock as the breeder knows that he is not selling to an unknown individual but to the Ontario Beekeepers' Association. The breeders on the list are carefully selected, any not giving satisfaction one year being eliminated the next.

To continue the account of Ontario beekeepers it might be in order to speak of the number of women who are taking up beekeeping as a means of pin money, if not of making a livelihood. Amongst these might be mentioned farmers' daughters, nurses, school teachers, to say nothing of the numerous wives of farmers and of beekeepers who take an active interest in this work. It is not uncommon to find a woman who finds the apiary work more congenial and profitable than some of the indoor occupations which women are expected to follow. There are at present over 80 women members of the Ontario Beekeepers' Association, and of these I might mention a few typical cases. The Scott sisters of Myersburg, Northumberland County, when European foulbrood attacked the apiary and the father decided to give up, took charge of the bees and cured them. The two girls not only cured the disease, but developed an apiary of about 40 colonies, which was very profitable. This was four or five years ago. The older one has since married and left home; and the younger, Miss Nellie Scott, continues the apiary work with her young brother. Miss Ethel Robson, of Ilderton, took up beekeeping to pay her way through college. Being successful and a good speaker she was made a director and a vice-president of the Provincial Association. She also acted as secretary of the Middlesex Beekeepers' Association. Miss R. B. Pettit, a sister of the present writer, undertook the management of a good-sized apiary without previous experience. By careful application and study, and through many mistakes and some losses, she has reached a point in a few years where she is quite capable, by employing labor, of managing several hundred colonies with profit.

Another type is the English woman, who comes out to make her living. She brings with her the Englishman's persistency, which is more than half the battle. Take the case of Miss L. Livesay, now of Rt. 2, Cainsville, who has had some experience under Isaac Hopkins, at the Government Experiment Station in New Zealand. She wrote from England, asking what the opportunities were for a woman getting employment in a Canadian apiary. The reply sent was intended to be discouraging to any one without capital to invest. She came on the next boat. Fortunately, she was found employment in an apiary, where she worked the next two seasons and then purchased one of her own. The second season she was joined by Miss M. L. Newland, another Englishwoman, and both of them worked for the same beekeeper. When they started on their own account, they purchased apiaries and located them not far apart and are now making a comfortable living from bees. They are now helping other English girls to get experience and a start in the business.

These and other beginners who have started in the right way and have persevered, have discredited, beyond the peradventure of a doubt, the old advice so commonly given to beginners to start with one or two hives and go slow. I well remember the late E. W. Alexander's assertion that "go slow" would kill any young man. It is only the question of getting a right start by working for an extensive beekeeper, or taking a course at an apicultural school, and then securing enough bees to occupy one's time. There will, of course, be mistakes and losses on a larger scale than would be experienced with two or three hives, but with attention to the instruction which is so freely given at conventions and in reports and bulletins, there is no occasion for a disaster, such as a heavy winter loss. Such disasters only come as a result of going contrary to the well-known principles of successful management. The one who starts with a good-sized apiary may have the misfortune to meet one or two crop failures, which will be a heavy tax on financial resources, but when success finally crowns persevering efforts, the profit is so much greater than it would be with two or three hives that it is well worth the venture.

Guelph, Ont.

[To be continued.]

Marketing Honey

BY C. P. DADANT.

(Read at the Wisconsin Convention in 1915)

MR. FRANK C. PELLETT, the Iowa State Inspector, has recently brought to me the suggestion that the neglect of honey as an article of food is due to the lack of official support to our industry. He says that honey is, towards glucose and all corn syrups, in the same relative position as butter is placed towards margarine. Yet butter is not neglected for margarine, as honey is neglected for glucose. In fact, no one who can at all afford it will eat margarine in place of butter. Yet margarine is so much like butter that deception is very easily practiced. I myself remember eating breakfast, side by side with a drummer of margarine, at a small country hotel, and hearing my companion exclaim: "I thought they could afford butter in country towns!" He had recognized the taste of his own product. But even after I was told of it, I could not distinguish it from common butter. With

PACKED IN QUADRUPLE CASES AT THE ONTARIO EXPERIMENT APIARY

American Bee Journal

honey, it seems to me, the case is different. Any one, after tasting corn syrup and honey, ought to be able to recognize the difference in sweetness, the former containing less than 30 percent of saccharine matter, while the other has about 80 percent. As far as the contents in sugar are concerned, the poorest honey is worth about three times as much as corn syrup; and when we think of the substances used to transform starch into sugar in manufacturing commercial glucose, we certainly should figure honey at four or five times the value of corn syrup.

But it is as Mr. Pellett says, there has been no active official support of honey against glucose. In the butter industry there is an army of officials representing the diverse interests of the dairymen, in the State agricultural associations, in the colleges, even in the State governments and the United States Department of Agriculture. The farming interests are carefully fostered, but the beekeepers have thus far received scant recognition and their rights have been left in their hands. We all know how little efficiency there has been as yet in our associations, whether State or National.

Yet, I believe every person who is at all acquainted with the subject will agree with me that the unhealthfulness of glucose as compared to honey is greater than that of margarine as compared to butter. The fight, if it is made for honey, ought to bring an easy victory. In this case, what we need is to have in our colleges, our boards of agriculture and in all official places where the dairy interests are cared for, men as active and efficient as those who represent the farmers' main products.

But is this all and will that be sufficient to secure an increased recognition of honey on the consumer's table? It certainly ought to help.

A very good argument concerning the food value of honey may be produced, while the same argument does not exist in comparing butter and margarine. Those two substances have a very similar food value. The food value of honey has been shown by an entirely disinterested authority, W. B. Barney, State Dairy Commissioner of Iowa, and those of your members who have read the American Bee Journal for December, 1915, have found out that, at present prices, honey is one of thecheapest articles of human food.

However, with all these convincing arguments, we will probably be still confronted, for years to come, with the problem of creating an increased demand for honey. We must then consider the principal requirements.

Marketing honey can properly be divided under two separate heads, entirely different. The first is packing and preparing the product. The second is seeking customers.

Many beekeepers who are unfit for drumming their honey market, or at least consider themselves unfit, are quite expert in putting it up for sale in neat form. It takes cleanliness and judgment. Comb honey cannot bring the value it deserves unless it has been properly stored by the bees in neat sections and is afterwards put up in attractive cases. It must also be offered in regular grades. The law which compels us to sort out the sections of different weights so the retailer will not run the risk of offering a 10-ounce section at the same price as a 14 ounce, is really a benefit to us, though we did not realize it at first. All that is needed, to make sure of it, is to start out among the retailers. We make them secure against the most common complaint of the consumer, short weight, when we offer them a package in which each section has its minimum weight marked upon it.

The careful beekeeper, who has supplied his bees with up-to-date supers and good foundation guides, is usually the one who also most carefully grades it. He is likely to put up his extracted honey, without a mote or a blemish, in neat tins or glasses. He crates everything so that it may travel safely without leaking. But he usually is the man who does not like to go from grocer to grocer, or from neighbor to neighbor, begging for them to try his product. However, I believe that, as a rule, he may be easily persuaded to advertise. This, of course, if rightly conducted, will make matters much easier for the drummer.

A very good advertisement, suggested by our old friend, the erewhile cow-boy, Dr. Bonney, is the little red slip "EAT HONEY" to be pasted upon everything, everywhere, as "SOZODONT" used to be. It has been tried. The American Bee Journal household alone have supplied over a million of these, not only here, but in foreign countries as well. But that is not enough. Let me ask the question whether any of you have seen these slips in public places, except where you have yourselves pasted them? "SOZODONT" was painted on the walls of buildings, on fences, on sidewalks, and I have even seen it written in almost inaccessible places, on rocky bluffs, along the Mississippi river, in letters 10 feet high. Our beekeepers cannot do that with "EAT HONEY" stickers, but they can each spend a few dimes to call the people's attention to a long forgotten sweet, of which the most respected authorities say: "Eat honey, my son, for it is good."

I will never forget the reply I received once from a good friend of mine, now deceased, who used to sell thousands of pounds of my honey, although he was neither a grocer nor a drummer. He was just an office man, busy at his desk almost from morning until night. How do you succeed, I asked him, in selling so much of my honey, apparently without any effort? His reply was:

"My boy, there is no difficulty in selling honey. If I had to handle tobacco, or whisky, among my friends, although many more people use those articles than honey, yet I would daily meet people who would say to me: Aren't you ashamed of offering such stuff for sale? But honey? Why, no one objects to honey. Everybody knows that it is good, sweet, healthy. Only once in a great while do I meet some one who says honey has made him sick, and I answer that he or she probably ate too much of it. The funny thing is that it is almost always true. The only question people ask is whether it is real honey, pure honey. And when I say that the producer of this honey lives in the country and is a friend of mine and that I can guarantee his goods pure, I make a sale, especially if I can give them a sample to taste."

That is all the secret of marketing honey. Make the people think about honey for a minute. Then let them know you have it and let them be convinced, in an *undoubted* way, that it is really honey from the bees and your sales are assured.

I said that honey marketing could be separated under two heads, packing and drumming, but I have now mixed them up. I have tried to convince the careful producer and packer of honey that he can also be a good drummer. But it is out of the question to get some of our best beekeepers started in peddling honey. One of our best producers said to me:

"I can raise honey as well as any one and I can put it up in fine shape, but I am no good at offering it for sale. If I make a trial at it and go into a grocery, if they say no, I walk right out without trying to argue the point and I am ashamed to try the next. When it comes to going to private houses, it is still worse. I always feel as if they considered me as a book agent or a beggar. If I happen to have enquiries, it gives me a little courage, but just as soon as I meet a refusal or a doubt of the quality or purity of my product, I want to be a hundred miles away, as soon as possible."

There is too much truth in that statement for the good of honey marketing. The only remedy for that bashfulness is the securing of a good talker, or thorough advertising. However, with a little self-reliance, a man can get a start and if he succeeds, he becomes encouraged.

I cannot too much urge the selling of our crop or as much of it as possible, even in our own vicinity. Personally, we have sold our own crops usually without difficulty, and we now sell three or four times as much as we produce. But even with all the advertising that we do, every now and then we find that other honey has been supplied where we could have furnished it, had we more thoroughly covered the ground.

Cheap sweets, which can in no way be true substitutes for honey, are the greatest hinderances to its sale, since they apparently fill the demand, through the positive ignorance of the masses concerning the difference in food value and healthfulness.

So we must openly and unrelentingly fight the cheap sweets. We should *demand* the help of our agricultural officials and colleges in this fight.

Thoughts When Reading the Leading Article in the June Number

BY F. GREINER.

HONEY, it is true, could be on the market every day in the year, because it is not as perishable as many fruits, grapes, berries, etc., and still, like them, has its season. People have accustomed themselves to demand honey in the fall and early winter; there seems to be but little call at any other season. On the other hand, a continuous demand might be created

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by continuous advertising. The question then arises: Who is going to pay for this advertising? Large corporations who monopolize certain branches of industry can easily carry on such work. They can establish their price for the commodity they produce, but can we beekeepers do this? It would mean concert action of the beekeeping fraternity; it would mean the putting of our money into the advertising business. I wish that we honey producers might learn from such concerns as produce cornflake, wheatflake, shredded wheat biscuits, etc., but it seems we are not willing to put our money into it. Extensive advertising would cost us many thousands of dollars as it does other concerns, but it would be effective.

The honey producers are situated exactly as the other agricultural producers, the farmers generally are. They produce the goods, but they fail to pool their interests so as to be able to control the market. On the other hand, there are many good points made in the leading article of the June number, and the article will bear reading and re-reading.

However, the illustration of the carrier is misleading. That style of carrier was all right before the present ruling of the railroad companies went into effect, but will not do at all now. A friend of mine had several tons of comb honey put up in such carriers last fall, and when he took it to the station for shipment the railroad company refused to accept it. He was at the trouble of remodeling the carriers by using more lumber and making perfectly tight boxes of them. If the honey producers understand this fact that all honey must be enclosed in tight boxes, they will save themselves much trouble.

Naples, N. Y.

[Mr. Greiner is right concerning the agricultural producers, beekeepers or farmers. "They produce the goods but fail to pool their interests so as to control the markets." A popular magazine writer said lately: "The farmer produces his crop by the most modern methods, but he disposes of them by the same methods as did the farmers of the Middle Ages."—EDITOR.]

Minnesota Notes

BY EDW. WILLBRIGHT.

I BOUGHT an automobile last fall and worked out a scheme for using the machine for power to run a circular saw. I made a frame wide enough for both hind wheels, and by means of four pulleys covered with rubber, hooked up to a circular saw. This outfit answers all my needs in the saw line. For shafts I used one-inch gas pipe,

Figure 2 shows a design in honey that took first prize at the State Fair, and also at the county and local fairs. Figure 3 gives designs in beeswax. The extractor has comb pockets and will run, but is not reversible.

Unfortunately my bees are some 20 rods from my cellar, necessitating a long haul. Again, Fig. 4, I had to call my car into use to get the colonies moved. It accommodated eleven at a trip and insured easy riding and few jolts for the lot.

Preston, Minn.

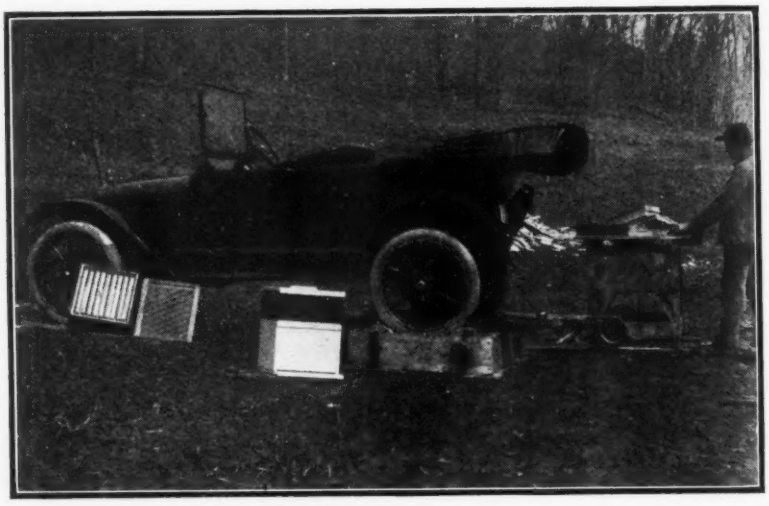

FIG. 1.—EDWARD WILLBRIGHT USES HIS TOURING CAR TO RUN A SMALL CIRCULAR SAW

Various Thoughts from the Bee-Yard

BY G. C. GREINER.

WITH the usual routine of fall work in the bee-yard, of which placing our bees in their winter quarters forms the last part, the season is ended. If feeding, where necessary, has been properly done, we may rest easy and trust providence for the future welfare of our bees.

When examining my bees for winter stores about the middle of October, 1915, I found eight or ten colonies run for extracted honey not as heavy as I would have them for best results in wintering and springing. It is always this class, if any, that is deficient in stores. They keep storing in their supers and neglect to stock up their brood-chamber with sufficient winter stores. This is probably one reason why bees produce more extracted than comb honey. All my comb-honey-producing colonies were up to standard weight, and those used for finishing sections by feeding were even heavier than necessary. They probably had some honey to spare to help out needy ones in the spring.

After many years of experience trying different feeding methods, I am satisfied that heavy combs of capped honey are the most desirable for this purpose. I secure them by sorting out the right kind of combs when doing my last extracting. If any colonies are found insufficiently supplied, which I easily ascertain by lifting, I exchange one or two light side combs for some of those reserved combs of honey. This is a simple operation, quickly done and no smoke needed. Some cool morning when bees are well clustered, the cover can be slipped an inch or two to one

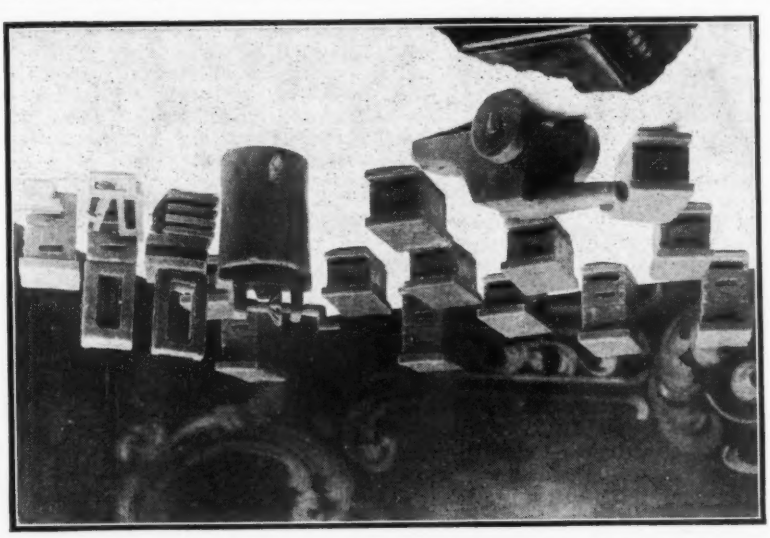

FIG. 2.—WAX MINIATURE HIVES, A WAX CANNON, AND A HONEY EXTRACTOR MADE OF BEESWAX

The extractor works, too, but could not be made reversible.—Edw. Willbright

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side and the exchange made in less time than it takes to tell it. This, by the way, tallies one for loose-hanging frames. With the Hoffman or any self-spacing frame it would not work so well, but it could be done.

While the subject of exchanging combs is under discussion, I wish to give my younger beekeeping brothers, who have not yet stocked up with bee-supplies to any great extent, a few hints from long years of experience. When an apiary is once started, when we are once stocked up with an outfit running into the hundreds of hives and appliances, it is an expensive and troublesome affair to make a change in one form or another. In planning our future work our main object should be to adopt ways and means which are likely to give permanent satisfaction according to our best judgment, taking all points into consideration.

A short time ago a young beekeeper, or, if I am justified by the run of his conversation to consider him a "contemplating" beekeeper, called on me for a few pointers on various subjects. He intends to compromise between the low 5-inch and the full sized 9 or 10 inch extracting super by constructing one about 7½ inches deep, because he considers the former too low and the latter too deep. This is very well in some respects; he may gain some anticipated advantages by doing so. But after long years of experience I would under no consideration deviate from my fixed rule of uniformity, both in frames and outsides. The advantages gained by varying in form or size would in no way compensate for those lost by irregular construction. The above described easy manner of feeding for winter stores would not be possible without this uniformity. Then, again, it is many times desirable to move, for certain purposes, combs of brood from the brood-chamber to the super above the excluder, which is frequently done to cure slight attacks of foulbrood. Another advantage in uniformity of outsides is the case of changing from one to the other. It sometimes happens that we have more of one kind than we have of the other. By simply detaching the bottom-board from the hive we have a super and *vice versa*, the same bottom hooked to the super completes the hive. These changes may not be every day occurrences, but they are a great convenience when we do have occasion for their application.

Another plan, which our friend intends to adopt with his future bee-management is the construction of bee-sheds holding 14 colonies. Taking my own experience as a guide, I am inclined to think he will see the time that he considers this a mistake. Where will he get his 14 colonies to fill those sheds? To move them back and forth from winter to summer and from summer to winter position requires too much shifting, to say nothing of the inconvenience in handling those sheds on account of their great weight. I he intends to keep them permanently housed, he would obviate this trouble, but for the production of extracted honey it is more convenient to have them placed on separate stands spaced at reasonable distances, which also facilitates all spring and summer manipulations.

My first attempt in making sheds for winter protection did not prove a success as I had expected. I made them to hold 9 colonies, which I found too large for convenience, and consequently used them only one season. When cut in two, making one to hold 5 and a smaller one to hold 3, they served the purpose much better, and if I should have to build new ones, I am inclined to think I would give the smaller one the preference.

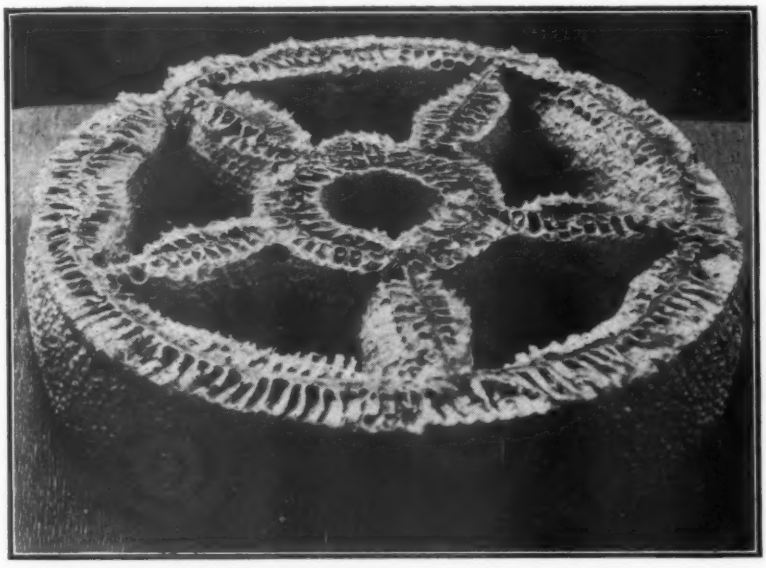

FIG. 3.—COMB HONEY DESIGN OF EDW. WILLBRIGHT.
Which took first prize in its class at the Minnesota State Fair in 1915

I wish to say a few more words in regard to the use of full sheets and especially bottom-starters in sections. I know that a few of our most experienced beekeepers consider bottom-starters of little value for any purpose. Until a few years ago I was a victim of the same error. I considered full sheets of foundation in sections a nuisance (I am not quite over it yet) and bottom-starters a greater nuisance. But since I have made heavy yields my main object, and from all appearances have succeeded, I find that every little help and assistance we can render our bees increases our yield, and bottom-starters are not of the least importance along that line. Next to the increase of yield the great benefit derived from their use is securely attaching combs to the bottom of the section, which prevents breaking loose of combs when shipped or roughly handled, more than being attached to the sides.

The claim that in a good honey season bees make honey and attach combs to the bottom under any management, with or without bottom-starters, cannot be disputed. Seemingly, these little helps do more good in a poor or moderate honey season than in a good one, but a rushing honey flow is just

FIG. 4.—TOURING CAR OR TRUCK, THE BEEKEEPER SUITS HIS MACHINE TO HIS INDIVIDUAL NEEDS

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the one when our assistance, unimportant as it may seem, gives the most paying returns in proportion to our labor. Every little detail must be carefully seen to, to obtain best results.

La Salle, N. Y.

No. 23.—The Honey-Producing Plants

BY FRANK C. PELLETT.

Photographs with this number by M. C. Richter, of San Francisco.

THE acacias are shrubs or small trees which are widely distributed throughout the warmer portions of the world. There are said to be 450 species, of which nearly 300 are native to Australia and Polynesia. We also find references to them in India, Africa and South America. The different species are known by various local names. In Europe some are known as mimosa trees. As sources of honey they are important in Texas, Arizona, New Mexico and California.

The sweet acacia, *Acacia farnesiana*, is found along the Gulf coast in Alabama and as far east as South Carolina. In Texas the huajilla, *Acacia berlandiera*, is an important source of nectar. In fact, according to the Texas bulletin on honey plants, it is the main source in southeast Texas. It grows abundantly on dry and rocky hills which often are not suited to growing agricultural crops. The honey is white and of fine quality.

The catclaw or paradise flower, *Acacia greggii*, is another very important source of honey in the southwest. It is one of the principal sources of dependence in Texas, where it is reported as yielding in April. Arizona reports a later yield, blooming there in May and June. Like the huajilla the honey is light colored and of very fine quality.

We are indebted to M. C. Richter, the well known Pacific coast authority, for the two illustrations which accompany this article. Figure 94 shows the black wattle of California *Acacia decurrens mollis*, which is widely grown as an ornamental in the gardens and along roadsides in that State. It blooms from February to June and produces some honey and an abundance of pollen. Figure 95 shows the silver wattle, *Acacia dealbata*, another widely grown California shrub.

As a family, the acacias are among our most valuable honey producers, although they are confined to the warmer sections. Many of them have delicate fern-like foliage.

Atlantic, Iowa.

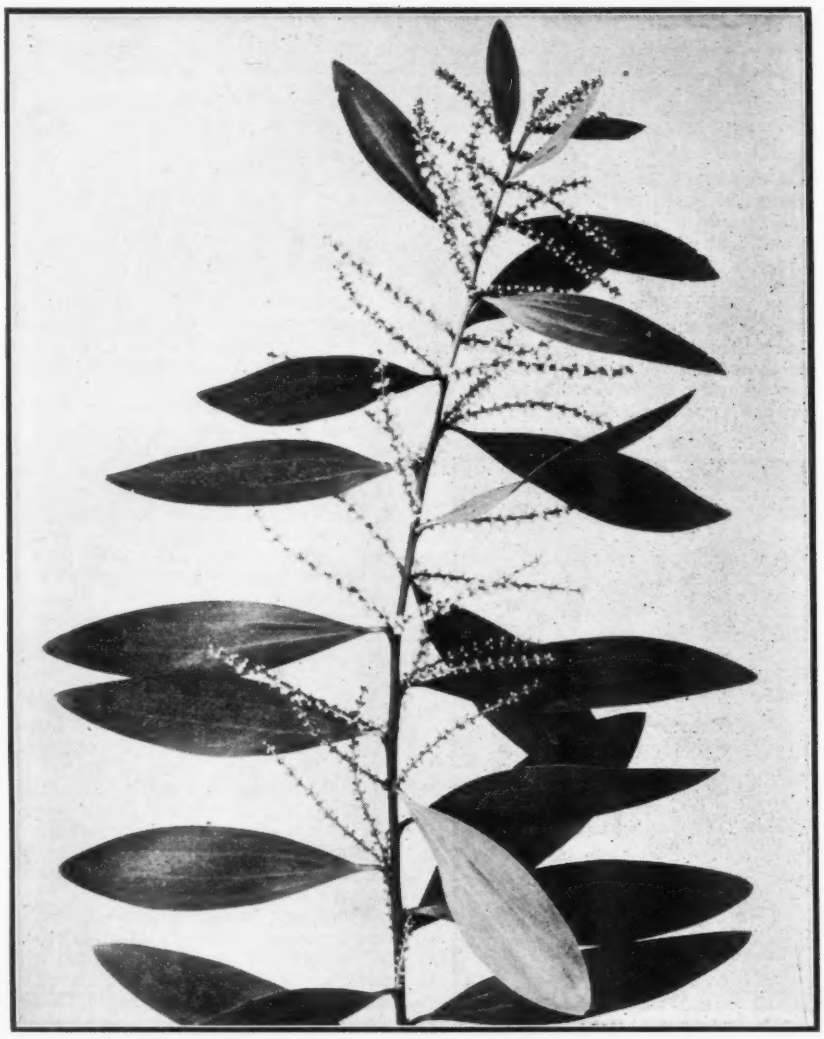

FIG. 94.—ACACIA OR BLACK WATTLE (*Acacia decurrens*)—(Photograph by M. C. Richter)

Bees on the Heather

BY N. TOURNEUR.

FEW British honeys are more esteemed by connoisseurs than that coming from a certain district of the borderland between England and Scotland, where it is gleaned from bean blossom and white clover. Yet, though most delicious and much the most beautiful, it does not sell so well, owing to a lack of strength in the wax, with the result that it runs easily. To remedy this, then, the beekeeper shifts his hives to the far distant moorland, or hills, when the miles of heather are coming into purple bloom.

As soon as the oats begin to turn yellow the change is made. For some weeks previous the beeman has been making preparations, and sending out far-scattered inquiries as to the best tracts of heather of the year; for sending his bees to the moors is an event of great importance to his pocket; and, to many of his kind, living in secluded hamlets of the foot-lands of the Cheviot Hills, it is the great romance, adventure, even, of the twelve months. The journey having to be made during the night, there is a pleasing feeling of danger owing to the wild nature of the road or track and the character of the burden conveyed.

In places near the moors or hills, or only two or three miles away, the hives are carried on stretchers, attended by a convoy of lantern bearers to lay bare the perils of the way and guard the footsteps of those carrying the hives. But when there are many hives, and the distance is great, other means of transport are utilized. Some fortunate beemen are so situated that they can send the hives by train, but they are few. Others, again, greatly daring, have strapped a hive on each side of a steady-going and sedate old pony, or, more preferably, a donkey, and the animal is carefully led along the road and moorland paths. Most generally, however, a long cart is borrowed from a near farmer, usually himself a beekeeper.

After dark, when the bees have given over work for the day, the entrance to the hive is closed by means of the perforated tin or zinc slide, and the hive carefully marked in some secret place to distinguish it from the others belonging to neighbors, also sending theirs to the heather; for beemen are not free from sleight-of-exchange tricks with hives, as the canny borderer may have experienced.

Before the cart or carts arrive an old beekeeper, whose hand and brain are like a calculating machine, so near can he get to the different weights, goes around handling the hives, and merely by the scent of the hive telling its condition. He also closely examines the packing of the hives into the vehicle, for there will be many a jolt on the road where the ruts are deep and the stones large. He can tell of expeditions to the heather where

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through mishap the horses have been stung to death, and the driver and his companion have only escaped by taking headlong to their heels.

At last, however, at a late hour in the night on account of the desired coolness and, also, that it may not be in the dark of the early morning when the cart comes to the dangerous track on the different moors or heathery hills, the valuable cargo is started on its journey. Often it is late in the morning when it arrives at its destination, the men, horses, and inevitable dog looking very tired.

The shepherd, who for a small sum per hive is to keep an eye on the apiary, is on the spot, and in a short time the hives are set safely inside the disused circular sheep-fold and the bees are let out. In one circling sweep they seem to find their bearings, and settling down to work industriously, are soon coming back with their burdens.

It is seldom the border beeman makes a mistake, and dispatches his treasures to any reaches of purpling heather deficient in the requisite nectar.

He not only certifies his inquiries as to the condition of the heather whether it is moorland or mountain, but can tell at once by the very color of it if there is honey. When he arrives with his bees, if the night has been dewy and the morning balmy, as likely as not he walks through the heather and notices how the pollen whitens his boots, thus enabling him the better to judge of its honeyed conditions.

Sometimes the shepherd has from 600 to 1000 hives in his charge, and, incidentally, his dogs', too, the real guardians of his domain, which may cover from 3000 to 4000 acres of moorland or hilly slopes.

Seldom are the bees on the heather for more than a fortnight. The chilly nights of September bring the beekeepers back for their well-filled hives, and the prospect of probable gains.

Thundersley, England.

Theory vs. Practice

BY A. S. PARSONS.

I DO not want you, dear readers, to get the impression from what I am about to say that I am opposed to education or advanced ideas, so long as they are based on common sense. I am convinced that we as a people or as a nation are depending too much upon theory and losing sight of some of the good lessons taught us by experience and practice.

I will recite a few instances where in my opinion experience does not verify theory. My first experience in feeding alfalfa dates back to about 1887. At that time I was living in Garden City, Kan. I had bought a 5-acre tract of land and had to have a horse and consequently something to feed it. Alfalfa being the principal forage crop I bought a load of the nicest, brightest, green alfalfa hay I could find.

The amount of that hay my horse consumed was wonderful. I could hardly get the harness buckled on in the morning, but by noon it was so loose it looked like it would fall off. I was told this hay was second cutting, cut when just beginning to bloom, just the time when theoretical science is now advising all alfalfa to be cut. They tell us that chemical analysis shows this to be the proper time. I complained and was told I should feed the first cutting, as that was best, so I bought a load of first cutting. When that was delivered I noticed quite a few seed pods and some dry bloom. It was not so bright, and my horse did not eat it so freely, but he gained in flesh and I soon learned I could dispense with grain and keep him in good shape. This was the beginning of observations that have proven to my entire satisfaction that the farmer who cuts his alfalfa before it gets in full bloom is making a mistake.

Only a short time ago we were told by theoretical men that sweet clover was a pernicious weed unfit for anything useful, and I think some States even passed laws making it a penal offense for a farmer to allow it to grow on the wayside. But some "cranks" kept saying it made good hay and would grow where nothing else would, until it simply had to be recognized.

And now I am told that our experts have discovered that our alfalfa is stricken with a disease that is threatening to annihilate it entirely, and that we will never be able to get the crops of honey we have been accustomed to harvesting; but I believe that when we get back to normal seasons we will get just as much honey per acre as ever. The last two seasons in the Arkansas Valley have been exceptionally unfavorable to the secretion of nectar. Time will decide this question.

In the spring of 1903 I came to Colorado and cast my lot with the beekeepers. I shipped in 125 colonies from Texas and got a nice crop of honey. Then came the question of wintering. I was advised to pack them by banking on the northeast and west sides with something dry and put a super on top filled with chaff or leaves. I did so, using the utmost care to do a thorough job of it. About March 1, a neighbor

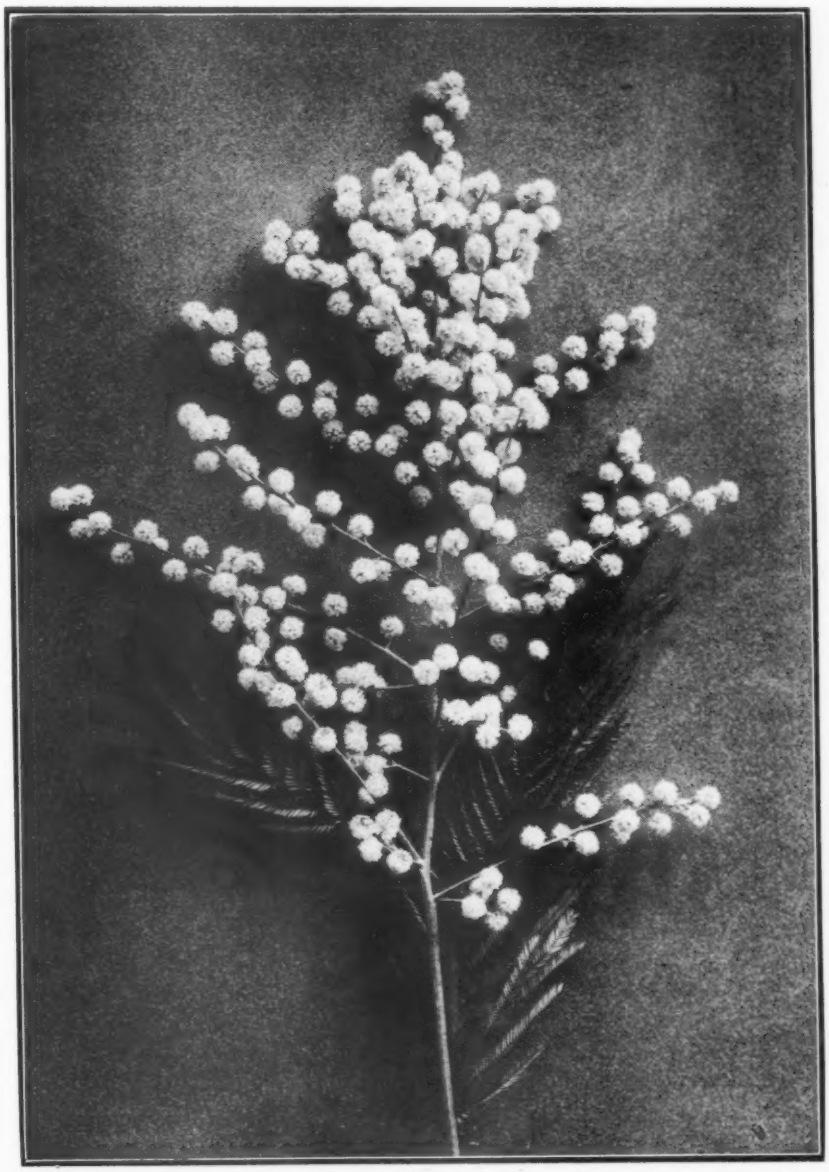

FIG. 95.—ACACIA OR SILVER WATTLE (*Acacia dealbata*)—(Photograph by M. C. Richter

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told me he had 12 colonies he would like for me to take care of during 1904. When I went to look at them I found them sitting in a row facing south with a little straw thrown over back of them but otherwise not protected.

As it was a little cool I would not open tnem, but felt sure there were live bees in all of them. However, I noticed one with a cover so badly warped I could slip my fingers under one side of it. This one I fully expected to find very weak if not dead when I looked them over later. Judge of my surprise at unpacking time when I found my loss to be about 25 percent, and what were alive very weak in bees while all 12 of my neighbor's were alive and the one with the defective cover the best one of the lot. This experience marked the beginning of another set of observations that are proving in my practice directly the opposite of all scientific theory advanced at the present time.

Is not man's intellect making slow progress improving on bees' instinct? I consider all radical changes made in the interior or outside location of a hive of bees *after they are through work in the fall and before they begin work in the spring*, as interfering more or less with their instinct and to be avoided as much as possible.

Theory might prove to most of us that it would be better for the mourning dove to build its nest under cover that it might be protected from the hail storms during incubation; but it would be a difficult matter to convince the dove of the fact.

I am seeking no controversy with any one, only stating matters as I see them.

Rocky Ford, Colo.

Sections Plain or Beeway?

BY E. F. ATWATER.

IN an article entitled, "Sections and Dividers (Separators)—Are They Perfect in Construction?" page 19, Mr. F. Greiner reaches conclusions with which, so far as separators are concerned, we are in complete agreement. Among the first fence separators tested by the writer, were some with upright cleats ¼-inch wide, and there is no question whatever that they gave better satisfaction than those with cleats ¼ to 5-16 inch wide, as usually made for some years past.

The "sealing at the edges drawn clear to the separator and attached to the cleat" is something that is found in far too many cases where the usual narrow cleat is used, while with the wide cleats this does not occur, as use will demonstrate to those who wish for a uniform non-leaking product of section honey.

Mr. Greiner says "grave doubt still lingers in my mind as to whether the freer communication the fence gives to the bees as compared to the solid separator is of any advantage." The writer has produced carloads of comb honey, and is sure that the advantage of the free communication given by any open separator is but slight, either to the bees or their keeper, while the openings favor gnawing of the fence by the bees and ridgy surface of the comb honey, while if there is any crowding, the comb may be built out and capped in the opening, or at least attached to the fence. So for many years past the fence has been discarded, and we in common with nearly all of the practical carload producers of honey have turned to the old standard two beeway 4¼x4¼x1⅞ section, entirely satisfied that we get as fine a product, so far as actual marketability is concerned, as can be obtained.

Through this part of Idaho and Oregon where many thousands of colonies are kept, and where the writer was one of the few to first engage in extensive beekeeping, and has had the best of opportunity to observe the growth and development of the industry, the plain section and fence separator were tried for several years, but are, I believe, now discarded by all the extensive producers (even their most enthusiastic advocates of the past) with one exception.

The same appears to be true in Colorado as of the extensive producers there the writer knows none using the fence system. Not that the old standard beeway section is perfect, but none other has yet been developed that has as many advantages.

Now, in regard to the depth of the beeway in beeway sections, Mr. Greiner favors beeways only ⅛-inch deep instead of the usual depth of 3-16 or a a little more. It is true that with the beeway only ⅛-inch deep the surface of the comb is a little better protected from careless handling, but as most supers in use are of the section-holder style (section-holders resting on strips of tin or iron nailed to the lower inside ends of the super), and used with scalloped separators, and as occasionally the end-support of the separator produced by the scallop along its lower edge will break off, the separator will drop down ¼ to ⅜ inch at that end, and if the beeway into the sections is only ⅛ inch, the bees cannot enter the section at that opening, now reduced to ⅛ inch by the separator.

With the usual opening the bees can readily enter, even though all the separators were so broken. Many of our supers contain section holders, and with them we long ago gave up ordering separators with scallops, as in cleaning and use the projecting parts become broken off, when the separators will drop down, often inviting comb-building at the then enlarged space above.

We have our separators for section-holder supers sawed 1-12 inch thick for durability, with no slots nor scallops to favor breakage. The slight increase in thickness makes them far more durable, and contrary to the fears expressed by some, there is no apparent difference in the readiness with which bees enter or work the supers, though with Mr. Greiner's ⅛-inch insets the bees would be barred out.

In our opinion, and the opinion of nearly all producers with whom we have talked, it was a great mistake to "boom" the newer styles and sizes of sections, etc., as there is endless confusion in loading cars made up by several producers, while there is no question that grocers prefer, in the long run, a uniform product, and the consumer actually prefers honey not capped to the edge, after using enough of both kinds to form an opinion. With an "extra fancy" honey all capped to the edge, if as ripe as ours usually is, a hot knife must be used and dipped and wiped twice for each side in cutting such honey out of the section or every cell will be broken.

Meridian, Idaho.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

The Goldens

Now, now, now! You bee people are shaking the very foundations of a pet dream of mine. I had hoped sometime to have a large number of the beautiful golden bees. My experience with them is small, but some of the evils laid to them I saw no indication of. They may not be as hardy as the leather colored, but for gentleness and energy I found them away ahead of my other bees.

I made a great mistake, for I purchased a pound package of bees Sept. 1, hoping they would build up enough to winter. It was not a good fall and the stores were not good. I lost, not only the goldens, but most of the other bees as well with dysentery.

The bees were in fine shape when they arrived. They took possession of their new home and the queen began to lay. I fed the sugar syrup and they were afield every fair day. Robbers from a neighbor's hives were plentiful, but never a one got into the goldens' hive and came out again alive. I could easily tell, for the neighbor bees were dark. They were hived on old comb, which they proceeded to clean up, and they stored considerable syrup and honey. I could handle them fearlessly notwithstanding their vigilance in protecting the hive from robbers. The fall was cold. I put them into the cellar Nov. 1. None of my bees seemed as active and as sweet as in former falls, and very soon dysentery developed. I was too much of a novice to be sure, but I am of the opinion that most of the stores were from honeydew. Before Feb. 1 the bees were dead. The frames were badly stained.

Glover, Vt. HELEN M. MATHIE.

Some speak disparagingly of goldens, while others praise them highly. More than one reason may be offered for this. One reason consists in the fact

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that only a few years ago goldens did not exist at all, and being a new product the type is not well fixed. As a result, while it is true of any variety of bees that in it may be found good, bad, and indifferent specimens, it might be expected to be especially true of goldens. So when one woman says her goldens are good and another says hers are poor, it may be that the colonies of one may have little resemblance to the colonies of the other except in the matter of color.

Another reason for the difference in valuation may come from a difference in the colonies with which the goldens are compared. Suppose Mrs. A has an apiary of bees that are excellent in every way, and that Mrs. B's bees are the poorest ever, and that each of these women buys a colony of goldens which are of medium quality and just alike. Neither of them having had experience with bees except with the kind already on hand, it is quite natural that Mrs. A should pronounce the goldens inferior, and that Mrs. B should pronounce them superior. "Let each man be fully assured in his own mind."

Still another reason for a difference of opinion lies in the object one has in keeping bees. One keeps bees mainly for profit, and if he finds the leather-colored kind will produce more honey than any other, he will have none of the goldens. Another keeps bees chiefly as a pastime, and to him the beauty of the goldens is so great that he cares little whether they store more or less than others. And to one with an eye for the beautiful it is a matter of real pleasure to work with the golden beauties.

Orange Marmalade With Honey

To every quart of juice and pulp of seedless oranges allow two pounds of honey and two pounds of orange rind. Peel the oranges and boil the rind in water to cover until tender. Then cut into strips with a sharp knife or scissors. Take away the white parts from the juice and pulp, and put it, with the honey and the cooked strips of rind, into a preserving-kettle. Boil until it is of the proper consistency.—*The Christian Endeavor World.*

Stimulation in Spring and Fall

In 1908, when you got 151 sections per colony, did you stimulate your bees to rear brood, or were they strong enough? Do you stimulate in the fall, to increase the number of bees if they have plenty of honey and pollen?

[Mrs.] F. B. Overstreet.

Uvalde, Tex.

We did no stimulating in 1908, nor in a later year when our bees established the world's record for as many as 72 colonies by yielding an average of 266 sections, or 244 pounds, per colony. In the spring we see to it that each colony has not only plenty of stores, but abundance. If any colony lacks in this respect, it is given honey in sealed combs that have been saved for that special purpose from the preceding year. This cannot be called stimulative feeding, for it is all given in a lump. Not very much of such feeding is done, however, in the spring, for it is still better to have the brood-chamber so crowded with honey in the fall that no feeding in spring is necessary.

A colony with a good queen, if there is abundance of honey in the brood-chamber in the spring, will have all the brood the bees can cover, so nothing would be gained by stimulative feeding. Indeed it might do harm, for if small portions of food be given every day or every other day, and the weather is adverse, it may cause the bees to fly out and be lost.

There are, however, some localities where stimulative feeding becomes necessary; a time of considerable duration occurring when there is a cessation of all honeyflow for so long a time that the queen stops laying. If this dearth is only for a few days, and the hive contains plenty of stores, the queen will go right on laying, but if the dearth continues long enough, she will stop laying, and then the beekeeper must try his hand at imitating a natural flow of nectar.

In the fall we have never done anything in the way of stimulation. A good queen needs nothing of the kind, and played-out queens should not be tolerated.

Short Course in Beekeeping Taught by a Lady Beekeeper

The Short Course in Beekeeping I gave early this summer was given on three successive Saturday afternoons, May 27, June 3 and June 10, from 2:00 to 4:30 p.m. The charge for the course was $2.00 each. All but one of the students were novices, and several started beekeeping soon afterward. Ten enrolled for the course, which consisted of a short lecture each time, followed by practical demonstration and manipulation of the bees. I tried to balance theory and practice. Of course, the whole subject could not be dealt with in detail on account of lack of time, but certain subjects, such as swarming and swarm control, comb-honey production, etc., were treated more comprehensively. As field work they were taught to open a hive, handle the frames properly, distinguish the queen, workers, drones, also queen, worker and drone-cells, eggs, pollen, honey, brood sealed and unsealed, and to judge the condition of a colony and its needs; frames were put together, wired, and foundation put in, also section boxes prepared.

The course was held in the shade of a tall spruce hedge very near the bee-hives; chairs were set three in a row opposite a table covered with equipment behind which I stood while giving the preliminary lectures. By carefully arranging my notes, which I only needed to glance at occasionally, it was astonishing how much ground I could cover.

The course did not pretend to be advanced, but to contain the simple elements of beekeeping.

Josephine Morse.

South Lancaster, Mass.

Miscellaneous News Items

The Illinois Meeting.—The meeting of the Illinois beekeepers at Springfield was one of the best the association ever had, though the attendance was small; only about 35 being present. The 800 or more members of this association should bear in mind that there is much to learn at such meetings.

One of the most interesting talks was that given by E. R. Root, editor of Gleanings, on "Establishing a Trade Name in Honey." Our readers know that the A. I. Root Company has done a great deal of advertising of honey under the trade name of "Airline Honey." They have spent enormous sums, paying as much as $6000 for a full page ad in the October number of the Ladies' Home Journal. But the increase of demand for honey is well marked. Mr. Root insisted on this point, that when you adopt a "trade name" for your honey you give the customer confidence, because he realizes that if you wish to sustain your reputation you must provide satisfactory goods.

Mr. Root is of the opinion that the honey supplied under a trade name should be always of the same color and flavor, and for that reason he is in favor of a blend of the different grades that can be supplied. This is a little easier for a dealer to do than for a producer who does not wish to buy honey for sale. The beekeeper often has only one grade of honey to sell, and it may not be always of the same grade. But we have learned one thing, that it is possible to advertise honey so as to increase sales materially and still make a profit over the expense of advertising.

Jersey Cattle are Advertised.—We received a short time ago from the Jersey Cattle Breeders' Association two excellent photographs of Jersey cattle together with a circular telling of the success of the Jersey special train which left Waterloo, Iowa, for the National Dairy Show at Springfield, Mass.

No doubt the same material was received by all papers on the list of this association, and of course it was ex-

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pected that a share of them would help advertise this breed of cattle. Unquestionably this has occurred, since a paper as little allied as is ours can use the material in showing how much good can be done by advertising cooperatively.

Conventions Scheduled.—The following bee-meetings have been scheduled to take place as given:

Michigan, Lansing, Nov. 30, Dec. 1–2.
Northwestern, Chicago, Dec. 4–5.
Idaho-Oregon, Ontario, Oreg., Dec. 5–6.
Iowa, Des Moines, Dec. 5–6.
Minnesota, Minneapolis, Dec. 5–6.
New York, Canandaigua, Dec. 5–6.
Wisconsin, Madison, Dec. 7–8.
Ontario, Toronto, Dec. 12, 13, 14.

Special Notice to Subscribers.—High prices have not failed to affect the magazine and publishing business as well as other businesses. Higher prices for paper, inks, and supplies are being paid than ever before.

We are determined for the present, however, to hold our old subscription rate of $1.00 a year. In order to do this and still furnish the same high quality in the American Bee Journal as in the past, we are obliged to cancel from this date all short term cut subscription offers, all combination offers, and all agents' rates. In our advertising columns are given our new combination prices of the American Bee Journal.

Parties desiring to act as agents in getting subscriptions for us, would do well to write us at once.

We would urge all subscribers to renew subscriptions promptly on expiration, to save us sending needless renewal slips, notices, etc. If you want to discontinue, let us know it. We hope, however, that we have made the American Bee Journal of such value that you will not want to do without it.

You can help us and yourself by urging neighbor beekeepers to take the American Bee Journal, and by getting their subscription for us. Subscribers to bee-papers are not usually the beekeepers who make cut rates on honey to get rid of their crop. Such subscribers also know how to handle disease.

More Missouri Press Bulletins.—Press Bulletins Nos. 239 and 242 of the Missouri College of Agriculture, and written by L. Haseman, Entomologist, have been distributed to the papers of the State.

The former is entitled, "Taking Honey from the Hive," the latter, "Bees Must be Protected to Survive the Winter in Good Condition."

Dr. Haseman has the interests of the Missouri beekeepers at heart. With his cooperation the Missouri society should soon be in a position to demand adequate legislation and better education on beekeeping matters.

APIARY OF F. H. STACEY AT ADAIR, IOWA

Diarrhea Preventive.—A Wisconsin subscriber, Mr. C. W. Aeppler calls our attention to a remedy tried and recommended in the September "Schweizerische Bienenzeitung" (Swiss Bee Journal) by G. Landolf. It consists in adding a small quantity of peppermint to the winter stores. He says that since he has used that preventive he has not noticed any diarrhea. We will look further into this matter and have asked Mr. Spuehler, of Zurich, for an opinion concerning this remedy.

The New Miller Book.—The new book "Dr. Miller's Thousand Answers to Beekeeping Questions," now in preparation, will not be ready for delivery until February. In order to let our subscribers take advantage of the combination offer of this new book with American Bee Journal one year, we are listing the same in the advertising columns of this Journal.

As the Miller book is to be sold only in combination with a year's subscription we urge our subscribers to consult the advertising paper before ordering.

Mexican Stingless Bees.—According to the American consul at Vera Cruz, Mexico, it is generally believed there that wild honey possesses medicinal properties, particularly that from a small stingless bee about the size of the common house fly, says an exchange. This produce is highly prized. Sometimes this little bee is domesticated, and in such cases gourds are used for hives. The wax is usually dark, and even black in color. The wild bees form their nests in hollow trees, in fissures of rocks, and in holes in the ground, each species showing peculiarities in the selection of the locality. A species of wild Mexican bees locally named cuita, is of a dark color. Of this bee it is said that when angry it will discharge a liquid that will produce an itching sensation if permitted to touch the skin. Another kind of wild bee found in Mexico is a small yellow stingless one called zal. Then there is a kind known as the zicole, which builds its nest in the ground or in cracks of walls and rocks. Its honey is of fine quality, but its sting is much dreaded. One variety of wild bee constructs its nest like that of the wasp, attached to the limb of a tree. The honey is said to be of excellent quality.—*Exchange.*

National to Meet in February.—The directors of the National Beekeepers' Association have decided to hold the next meeting of the National at Madison, Wis., in February, date of meeting to be announced later. The officers have commenced on the program, and will take up matters of importance to beekeepers all over the country.

F. ERIC MILLEN, *Sec.-Treas.*

Wisconsin Meeting.—The Wisconsin State Beekeepers' Association will meet in annual convention in the Assembly Room in the Capitol Building, Madison, Wis., Dec. 7 and 8. An interesting program will be presented, and we are looking for the largest attendance at this time, although we had an attendance of about 150 last year. We expect Dr. Phillips and other prominent beekeepers to be there. Headquarters will be at Simons' Hotel.

N. E. FRANCE, *Pres.* GUS DITTMER, *Sec.*

Nature Books.—This office is in receipt of two books with the titles "Ginseng" and "Science of Trapping."

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They are well bound books and treat the subjects under discussion fully. Ginseng culture is carried on quite profitably by a number of people, and a book on its culture is of no little value to any one interested. The Trapping book sells at 60 cents and the Ginseng book at $1.00. They may be had by those interested by addressing letters to the publisher, A. R. Harding, of Columbus, Ohio.

Idaho-Oregon Honey Producers' Association to meet. The annual stockholders' meeting of this association will be held in the City Hall Assembly Rooms, Ontario, Oreg., onTuesday and Wednesday, Dec. 5 and 6. The first day's session will be given over to the election of directors for the coming year, and reports of this season's work, while the second session will be more in the nature of a social one, discussions relative to honey production being in order.

All beekeepers in this territory are cordially invited to attend.

P. S. FARRELL, *Sec.*

The Yorkshire Honey Harvest.—A contributor to the Yorkshire Post reports as follows on the honey harvest in the Leeds, England, consular district:

Yorkshire honey is likely to be very scarce this season. The heather is fully a fortnight late in blooming, and this in itself nearly always means a poor yield of honey from the moorland apiaries. The heather bloom of the north Yorkshire moors is very poor, indeed; in fact, the higher reaches are practically devoid of bloom, and it is the higher altitudes that produce the best and largest crop of honey.

The yield is bound to be small, and one beekeeper of long experience estimates that 10 to 15 pounds per hive will be a very good yield for the season. More than half the colonies taken on the moors will not give any surplus at all.—*United States Consular Report.*

Chicago-Northwestern Meeting.—The 20th annual meeting of the Chicago-Northwestern Beekeepers' Association will be held in Room 138 of the Great Northern Hotel, Chicago, Dec. 4 and 5. A partial program is as follows:

"Marketing Honey," N. E. France, Platteville, Wis.
"Extension Work in Beekeeping," Dr. E. F. Phillips, Washington, D. C.
Louis C. Dadant, subject unannounced.
"Displaying Live Bees in Chicago Groceries," Kennith Hawkins, Plainfield, Ill.
"About Heating and Clarifying Honey," Edward Hassinger, Jr., Greenville, Wis.

Prof. Jager, president of the National, will be in attendance, also others will be on the program, and the question-box will be a strong feature.

JOHN C. BULL, *Sec.-Treas.*

Beekeeping Course at Rutgers, New Jersey.—The need for and the opportunities in honey production are so large in New Jersey that Rutgers' College has decided to offer a short course in bee husbandry.

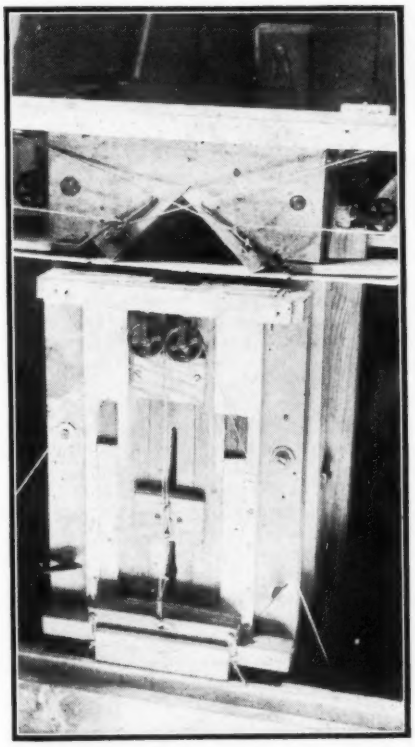
It is believed that nine-tenths of the nectar annually secreted is lost through lack of properly managed bees to gather it. It is known that tons of honey is annually brought into this State to supply local needs, and that practically no effort is being made to increase the use of honey. In view of these facts the splendid opportunity for profitable honey production in the State are apparent. Many have started producing honey without training and with such a small number of colonies that success was impossible.

The largest honey producer in the State has but 250 to 300 colonies of bees representing an investment of not over $3000, and the net proceeds average $1500 annually. One active man should be able to do all the work in handling 300 to 500 colonies with the help of unskilled labor for two or three weeks during extracting time.

That this splendid resource of the State may be developed, Rutgers' College will offer a short course in bee-husbandry provided as many as four persons apply for the course. This course is planned to give the student a practical knowledge of profitable bee-husbandry. Any one after completing the course and after having spent one season in a commercial apiary will be fitted to profitably conduct a honey-producing business.

Full particulars regarding this course can be had by addressing Prof. F. C. Minkler, Director Short Courses in Agriculture, New Brunswick, N. J.

THOMAS J. HEADLEE,
State Entomologist.



AUTOMATIC SECTION FOLDING MACHINE OF R. W. ADAMS, OF UTICA, N. Y.
To fold a section, drop in position as shown and press foot pedal; let up pedal and the section drops automatically into a box

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to DR. C. C. MILLER, MARENGO, ILL.. He does NOT answer bee-keeping questions by mail.

Miscellaneous Questions

1. Will you fully explain the top-most paragraph on page 777 of Gleanings, Sept. 1. Aside of this, I have always been deterred from trying to rear queens from best colonies because of fearing that I would lose too much while the bees were gathering honey.

2. When shaking bees off of frames I have a board in front at the entrance on the ground. Would a sheet of muslin be enough better for me to make a change to same?

3. In case you came to an apiary where early in the season an extra deep body had been placed over the brood-chamber, and about all such colonies had above four frames of honey heavy but not capped, and two frames of brood, and there was also a lot of honey below and you had no place to keep the honey frames, how in reducing the colonies to one hive-body would you manage?

4. Please state the principal reasons why it would be well for a comb-honey man to have and use an extractor; could such, meaning to meet all conditions to the very best, be at all able to get along without one?

5. When one has so very many frames in the midst of the season filled with honey, and they are extracted so as to facilitate queen laying, is it of any essential importance that the cells be perfectly cleaned out of honey or will it suffice in the condition as left by extracting?

6. Is there any good in removing burr-comb from the top of brood-frames in hives, aside of mere looks? PENNSYLVANIA.

ANSWERS.—1. I don't understand just what it is you want explained, but I don' see any need to be deterred from breeding from the best queen because of interference with the honey crop. You need only to take a few larvæ out of a comb, or at most cut out a piece of comb, not at all interfering with the amount stored. But it is a matter of such great importance to breed from the best, that I don't mind how much I interfere with the storing of that particular colony, even if it should break it up entirely. When a colony has made its record by its performance the preceding year, and it is decided that it is the right one to breed from, I keep that queen in a nucleus, both because it is a matter of convenience and because the queen is likely to live longer. This will interfere with the storing of one colony, but in the long run will increase the storing of all.

2. If the board is made so that there is a clear track for the bees to travel, without any cracks or breaks, it ought to be better than a sheet.

3. If there is nowhere else for them, they can be piled up on a colony—perhaps pretty weak—whose duty it should be to care for and cap these combs.

4. I know of no reason why he should necessarily have an extractor, unless he wants

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extracted honey. I got along many a year without one; so can you.

5. The bees will use them all right if left quite wet. Indeed with a vigorous queen the bees might empty the honey in the middle of the brood-chamber without its being extracted; and this may be additional answer to your third question.

6. Yes, indeed; if left from year to year it is likely to become worse and worse, one trouble being that bees are thereby killed in your manipulations, even if you care nothing about the daubiness and stickiness.

Keeping Bees—Colony

1. Can bees be kept in a back yard about 100 feet square where there are plenty of flowers and clover around?
2. What is a colony?
3. What is the best bee-pasture in this State? NEW YORK.

ANSWERS.—1. You should be able to keep bees in the back lot without trouble, provided care is taken to keep them from disturbing the neighbors.

2. A colony comprises the bees of a hive, the combs, and the hive in which the bees and combs are domiciled.

3. White and alsike clover and buckwheat are likely the best producers in your section Basswood and sweet clover may also figure.

Using the "Coaxer"

In referring to a "coaxer" described on page 347, October, 1916, what way, if at all, could the use of same be combined with the practice of giving early in the season a second full depth super to colonies in a forward condition? It seems almost to me that one would be compelled to choose between the two, one seeming in conflict with the other. PENNSYLVANIA.

ANSWER.—It is possible that it might work to put the "coaxer" under the second story at the time of giving the second story, and then when the harvest comes to take away the second story, put on the section-super, and put the "coaxer" over.

Feed and Feeding—Wintering

1. What is the best and safest food for bees in winter besides honey?
2. Do you think outside wintering is the best for bees if I give them protection?
3. What is the best way of feeding bees in winter? WISCONSIN.

ANSWERS.—1. Granulated sugar dissolved in water, about half and half if fed early in September, and about five sugar to two water if fed after the middle of October.

2. Hard to say. In general cellaring is safer in Wisconsin, but there may be exceptions. Find out which way is most successful with experienced beekeepers not far from you.

2. Give frames of sealed honey.

Queen-Cell—Granulated Honey

1. How old must a queen-cell be before you can take the royal jelly to graft cells?
2. If a hive-body containing frames of honey is left on top of a colony all winter, will the bees move up into it?
3. Will comb honey that is produced this season be granulated by the first of next June? IOWA.

ANSWERS.—1. You can take an unsealed cell of any age, but you will get more jelly if you take one nearly ready to seal.

2. They may if all the honey is used up in the lower story.

3. Like enough; especially if not kept in the best way.

Comb or Extracted?—Wiring Frames

1. I have ten colonies of bees and want to increase them next year, and I am undecided whether to go into the comb or extracted honey business. I would like to have your advice as to the profits in one over the other.
2. If I use full depth supers with full sheets of medium brood foundation in metal spaced Hoffman frames, will I have to wire the foundation in both hive-bodies and supers? MISSOURI.

ANSWERS.—1 That's an exceedingly difficult question to answer. In general it may be said that it requires less skill and experience to produce extracted honey than comb. Also that generally more extracted honey can be produced than comb. On the other hand, the price of comb honey is usually higher than that of extracted. Perhaps it will not be out of the way to say that in general 50 percent more extracted than comb can be produced. If that be the case with you, and you can get two-thirds as much for extracted as comb, then you will do as well with one as the other. But if you can produce more or less than two-thirds as much comb as extracted, then you would decide differently, as you also would if there should be little difference in price. If you will tell me how much of each you can produce per colony, and what price you can get for each, then I can tell pretty well which will be best for you.

2. Yes, unless you support the foundation with splints.

Bee Eggs—Liquefying Honey

1. Do bee-eggs freeze here in winter, and at what degree should I keep the eggs in cells?
2. Can you give me some information on how to hatch bee-eggs in an incubator?
3. What is the best way to make good honey out of granulated honey?
4. Can you give me addresses of Belgian beekeepers who have come to the United States since 1914? MONTANA.

ANSWERS.—1. I doubt if they ever do freeze, partly because there are not likely to be any eggs in the hive in winter, and if there were the bees would keep them warm. I suppose you could keep them for a little while anywhere above freezing, but I can't see that it is of any practical consequence.

2. No; I never heard of bees' eggs being hatched in an incubator, and very much doubt if it can be done.

3. If good honey granulates, it is still good honey I suppose you mean how to make it liquid. A good way to do that is to set the vessel containing the honey in a larger vessel on the stove, the larger vessel containing hot water, with a little board or something else under the honey-vessel, so that it cannot rest directly on the bottom of the larger vessel.

4. I don't know of any, but possibly some of them, seeing this, may respond.

Honey—Is it Beneficial?

I was just looking over an old paper, and came across an article headed: "Honey Aged Man's Friend." The article stated that you were 84 years old and had used honey very liberally all your life, and that you used honey in your coffee.

I expect to complete my course in medicine soon, and am trying to get what is beneficial in any medicine foods or drinks, and I assure you that any suggestions that you will be good enough to give me will be highly appreciated and gratefully received.

Can honey be used with any kind of foods, and would it not be beneficial for ulcers of the stomach and intestines? ILLINOIS.

ANSWER.—Sugar in honey and fruits is Nature's way of supplying that important article of food; and the substitution of cane sugar and beet sugar therefore—a substitution that has taken place not so many centuries ago—has probably not greatly lengthened human life. We are told that in the United States the consumption of sugar averages more than 80 pounds for every man, woman, and child. This sugar must be inverted before assimilation, and this inversion is something of a tax upon the digestive organs for those who consume the average quantity of sugar. But many use more than the average quantity, some of them very much more, and for them the substitution of honey for sugar might mean the saving of health, possibly of life.

Another item worth considering is the presence in honey of minerals which, although small in quantity, are important for the proper sustenance of the body, being present in honey in the most available form, and altogether lacking in sugar.

I have not been a regular honey-eater all my life—more's the pity. Like many others, even among physicians, I was not fully aware of the very wholesome character of honey as compared with ordinary sugar. But for a good many years I have used honey as a daily article of diet, and I am confident that it is partly owing to this fact that I am almost entirely free from digestive troubles, and at 85 enjoying life as much as at 45—indeed I think more.

To the question whether honey may be used with any kind of foods it may be replied that it may be used in general wherever sugar is used. It may be used in any kind of drink, hot or cold, care being taken that the flavor of the honey shall suit the individual taste, for there is no small difference in the flavors of different honeys, and a good many might object to the darker and stronger-flavored samples, especially in drinks that are hot. Honey may be substituted for sugar in baking, due allowance being made for the fact that honey contains something like 20 percent of water, and so using less liquid.

I do not know whether honey has any specific effect upon ulcers of stomach or intestines, but in a general way it should be favorable as making less demand than sugar upon the powers of the digestive organs.

Getting Bees Out of a Tree

How can I get a swarm out of a bee-tree? It is an old spruce about 18 inches through, the cavity being about 10 feet up. When is the best time to get it? WASHINGTON.

ANSWER.—Each case of getting bees out of a tree is something of a problem by itself, and some gumption is needed. In this case it would seem the first thing is to fell the tree, and some judgment may be needed so as to fell it with the least jarring. If on a side-hill, it will be better to have it fall uphill. Perhaps other trees stand near, so its fall can be partly broken. Then cut off the log close above and below where the bees are, split it open, and the bees are at your mercy. Use enough smoke to keep them in subjection, although so much jarring may make smoke unnecessary. Of course you will now proceed just as your book directs to proceed with a box-hive.

I don't know enough about the climate in your locality to say when is the best time to operate. You might cut the tree almost any time if you have warm spells so that bees fly freely. Yet if you are not afraid some one else will get ahead of you, it might be well to wait until spring.

Partnership Apiary

I would like some information in regard to beekeeping on shares. For example. A has 40 colonies of average grade bees in 1½-story hives, which are the offspring of one

American Bee Journal

colony caught some seven years ago. These bees are located on A's 40 acre farm with other bees in small apiaries ½ mile distant. The farm and adjoining farms are producing mostly alfalfa crops.

A, having not given much attention to hiving, has let the apiary take care of itself resulting in most of the colonies building crosswise in frames, as no starter was provided when new swarms were caught. About one-half the colonies have done little else than live this season, and the total increase is ten swarms for this season, and about $60 worth of honey from the 50 colonies.

In June last A proposed to B that B care for A's bees on the co-partner plan of equal shares in the profits (increase being considered a part of profits), B to stand labor, expense except selling, which was done by both A and B. Later A proposed that B take one-half interest in the original 40 colonies on account of the extra work to put them in shape.

Now it appears to B that if he keeps A's bees for a term of years on this share and share alike plan (labor to be done by B) in a few years this plan would favor A to such an extent that B would be forced to quit.

So far very little else than section honey has been produced There are no tools, worth considering, furnished by A. B thinks he should take his half of the increase away so that he will not have to divide their increase and honey next season? How about B's interest in the original 40 colonies? B thinks that he would be giving too much the next season to leave them in the partnership apiary, while A thinks not.

Both parties are anxious to find a fair plan. A has not the time nor experience to care for bees, while B intends to build up this apiary and operate it in connection with other outapiaries. Any suggestions that would be fair to both parties will be very much appreciated. WASHINGTON

ANSWER.—The mix-up is new to me, and I am not sure I know enough to advise. But if I understand correctly, the agreement is that B gets half the crop and half the increase. If the arrangement were to be closed up at the end of the first year, then B would take away half the increase as his own property. Then if a new bargain were made for the next year, B's bees would hardly be considered in the transaction, and I hardly see how the case is any different if the arrangement continues from year to year. In other words, if B gets half the increase, that half is his own private property, and A has in it no claim whatever.

Bait in Sections

What is the least quantity of baits to be used in sections in a super of 32, to do the full good? PENNSYLVANIA.

ANSWER.—That depends on what you mean by "full good." The chief thing is to get the bees *started* in supers, and for that purpose I'm not sure that a single bait is less effective than a superful. If you mean to get the most honey possible, then the more baits the better, since of course bees will store more when saved the expense of making comb.

A Beginner

1. I have an old stand of bees in an 8-frame hive which I would like to transfer in the spring, but I do not know exactly how to do it to receive the best results, and would like to have you explain in full.
2. Is a queen and drone trap successful or not when a swarm stays on the outside of the hive, or do a lot of the bees go back into the hive again?
3. When you unite swarms is there any danger of them getting out the next day?
4. What causes them to destroy the sealed brood when they are united with a colony that has several combs of sealed brood?

ILLINOIS.

ANSWERS.—1. You want me to explain in full, and to do that I should have information in full, which you fail to give. All I know is that you want to transfer from an old 8-frame hive, but I don't know the size of frames the bees now have, although I am pretty safe in guessing that you want them in frames of Langstroth size. If they now have that size, 17⅝x9⅛, and you merely want to transfer from an old to a new hive, all you have to do is to give the bees some smoke, and then lift the combs, bees and all, from the old hive, and put them in the same order in the new hive. If you want to transfer into frames of different size, then just what is to be done depends upon the sizes of the old and the new frames. If the old frames are larger than the new, then cut out the comb, lay the new frame upon it, and cut to fit the inside of the frame, making the fit rather tight, and then tie strings around it. To do this latter easily, cut several strings, perhaps four or five for each frame, and have the strings long enough to reach around the frame from top to bottom, and then enough string to tie easily. Lay these strings upon a board in order, lay the comb upon the strings, put on the frame, and then tie. Better not try to lift the frame and comb from the board, but lift up the board with the frame on it so the frame will be in the right position, with top-bar up and then you can lift the frame.

2. A queen-and-drone-trap is successful in holding prisoner a queen that attempts to pass out with a swarm. When the swarm returns, a good many of the bees will cluster outside, but gradually they will go back into the hive, unless it be so warm that they prefer to hang out.

3. There is hardly any more danger than there is of a single swarm leaving the hive if it is too close and warm.

4. I don't know. I don't think I ever knew a case of that kind, although it might happen with drone-brood. In that case it would be killed when no longer needed.

Wintering—How to Make Bees Work in Supers

1. We are using 10-frame hives. Is it advisable to leave all ten frames for winter stores, or how much honey does the average colony need from October to April?
2. I have had trouble in getting some colonies to build in the supers. They had plenty of bees and honey in the lower box, but would not do anything in the supers.
3. Why will some colonies swarm when they have plenty of room, not even working in the supers?
4. Will bees work better in large or extracting frames than in sections?

ILLINOIS.

ANSWERS.—1. What you need to know is not how much the average colony needs but how much is needed by the colony that uses the most. Suppose you knew that the consumption by your bees the coming winter and spring would average 25 pounds, and you made sure to have 25 pounds of honey in each hive. The result would be that you would lose about half your colonies from starvation. For there is a big difference in the amount of stores consumed by different colonies, and you cannot tell beforehand which the big eaters are; and so the only safe course is to consider every colony a big eater, and provide accordingly. In your case it will probably be wise for you to leave not less than 30 pounds to each colony, and 35 may be better. Some would even prefer 40. You see there will be no waste if you give them five or ten pounds more than they need, for it will save their using just so much of the new harvest to fill up the brood chamber before storing in the super. Leave the whole ten frames for winter, with all the honey the bees have stored in them.

2. If sections are in the super, then you need to put in the first super given to each colony a bait section; that is, a section that was partly built out the previous season, and emptied by the bees in the fall. If the super contains extracted combs, then either the colony is not strong enough or else there is not honey enough to fill the brood-chamber and send a surplus above.

3. Hard to tell. Indeed, it is not entirely understood just why bees swarm at all, and such cases as you mention may occur for more than one reason.

4. It is generally believed that they will.

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SUBJECTS

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BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
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PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
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FOR SALE—300 to 600 colonies of bees, in the famous Hagerman Valley where failure is unknown; very reasonable. Address,
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VIGOROUS prolific Italian queens, $1.00; 6, $5.00. My circular gives best methods of introducing, A. V. Small,
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A LITTLE AD in our classified columns will sell that perfectly good equipment that you no longer need. Only 15 cents per line each insertion.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

ONE dollar and fifty cents pays your annual dues in the National Beekeepers' Association and a year's subscription to the Review. Do it today. Address,
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PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
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TELL several thousand people what you have for sale with a few words in this department.

WANTED—Bees on shares from 200 to 300 colonies, run for extracted or bulk comb honey, preferably in the chapparel region of Texas; must be a good location; no disease. Aug. Teufel Round Top, Tex.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

BEES FOR SALE—A number of well established apiaries in Frio, Bexar and Atascosa, Texas, in the mesquite and guajillo belt have been listed with us for sale on their present sites. Can also furnish bees in car lots.
Southwestern Bee Co., San Antonio, Tex.

THE BEEKEEPERS' REVIEW costs but a dollar a year. Many subscribers save 20 times this amount annually on their supplies by buying at wholesale through the Review. You had better join the rush.
The Beekeepers' Review, Northstar, Mich.

FOR SALE—The apiary of bees belonging to the late R. A. Elliston, consisting of 240 colonies in first-class condition. Price five dollars per colony, supers included. 1½ miles south of Bureau, Ill. P. O. office address, Princeton, Ill. Mrs. Robt. Elliston.

BEES WANTED—Wanted to buy bees within shipping distance of Atlantic, Iowa. Would prefer to buy f. o b. Atlantic, in ten-frame hives. Give full information concerning hives, bees, frames, etc., together with price in first letter. Would consider any number from fifty colonies up to carlot.
Frank C. Pellett, Atlantic, Iowa.

HONEY AND BEESWAX

WANTED—Honey in any lots from any point. The Honey King, Mahnomen, Minn.

WANTED—Extracted honey in any lots. Send sample and prices. Ed Swenson,
Spring Valley, Minn.

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

WANTED — Extracted alfalfa honey and wax. Send sample of honey, price, etc.
A. E. Burdick, Sunnyside, Wash.

COMB HONEY our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

THE BEEKEEPERS' REVIEW sells your honey for you without cost to you. Subscribe today and get on the list and be convinced. Address,
The Beekeepers' Review Northstar, Mich.

WANTED—Extracted white clover and light amber honey. Will buy in lots of 1000 pounds to a carload. I pay cash. State what you have and send sample with lowest price. Write. M. E. Eggers, Rt. 1, Eau Claire, Wis.

I NEED a large supply of extracted honey, must be white clover or its equal. 60-pound packages preferred. Quote your lowest cash price f. o. b. here. Send sample if you are interested. F. Bender,
221 Pub. Square, Nashville, Tenn.

FOR SALE—Our own crop of extracted white clover honey in barrels or cans. This is as fine quality white clover as we have ever seen. Write for prices and state quantity wanted. Dadant & Sons, Hamilton, Ill.

NO. 1 white comb $3.50 per case; No. 2, $3.00. No. 1 fall comb, $3.00; No. 2, $2.50; 24 sections to case. Extracted in 60-pound cans clover, 9c; amber, 8c; amber in pails, 6, 10 pound or 12 5-pound to case at $6.00 per case
H. G. Quirin, Bellevue, Ohio.

QUEENS, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed. H. C. Clemons,
Rt. 3, Williamstown, Ky.

HONEY WANTED—We are in the market for light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

MR. J. E. CRANE will write up his whole system of beekeeping in twelve articles that will appear during 1917 in the Beekeepers' Review. This feature alone will be worth much more than a dollar that the Review will cost. You should certainly include the Review in your list of reading matter for 1917. Address, The Beekeepers' Review,
Northstar, Mich.

FOR SALE—65 cols. Italian bees $4.00 per col.; 10 cols. hybrids, $3.50 per col. All from J. T. Moore's strain, and in 8-frame hive bodies in winter cases; standard full depth self-spacing Hoffman frames, 8 to each hive, all combs straight; cols. strong and healthy with stores for winter; would bunch the lot for $3.25 per col.; a few untested Italian queens, 60c each. Wilmer Clarke,
Earlville, Mad. Co., N. Y.

SUPPLIES.

WANTED—Cheap honey extractor in good order. J. D. Sherwood, Ft. Madison, Iowa.

MR. FLOYD MARKHAM is the champion comb-honey producer of Michigan; he now holding the gold medal given by the Michigan State Beekeepers' Association. He also won first prize at the Michigan State Fair this season. We are sure there is no better comb-honey producer in the world than Mr. Markham. He will tell the readers of the Review how he does it in a series of articles that will be published in the Review during 1917. If you knew how to produce exhibition honey, you would then be in a position to produce comb honey that would bring two or three dollars more per hundred sections than market price. Read the Review during 1917, and find out how Mr. Markham secures such good results. Address, with your dollar, The Beekeepers' Review,
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THE PERFECT Bee Frame Lifter. For descriptive circular address,
Ferd C. Ross, Box 194, Onawa, Iowa.

FIVE 8 and 10 frame bodies with Hoffman frames. $3.75. Supers, each, 75c complete.
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GET my idea of personal, local and distant advertising in connection with "Facts About Honey." 15c. postpaid.
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FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
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FOR SALE—One Root pattern uncapping box, like new. Dimensions 2x2x6 feet long. First offer of $12 takes it.
C. J. Canniford, R. R. 7, Rockford, Ill.

FOR SALE—One Detroit Kerosene Engine 6 hp., used but little, as good as new. Will sell for $75; cost $105 new.
The M. C. Silsbee Co., Rt. 3, Cohocton, N. Y.

FOR SALE—200 10-fr. dovt. Excelsior covers. Lewis make. New but discolored. In lots of 50@25 cents each.
Dadant & Sons, Hamilton, Ill.

WANTED—600 standard 10-frame shallow extracting supers in good condition. State price and full particulars in first letter.
Cowan, Carr & Lauderdale, Geneseo, N. Y.

GOOD second-hand 60-lb. cans, 2 cans to the case, 30c per case, in lots of 10 cases or less. In lots of 25 cases or more, 25c per case. These prices are f. o. b. Cincinnati.
C. H. W. Weber & Co.,
2146-48 Central Ave., Cincinnati, Ohio.

WANTED—We often have inquiries for old bee books and Bee Journals, and will be glad to buy and sell these for our patrons. Let us know if we can do something for you along this line. Address,
American Bee Journal, Hamilton, Ill.

FOR SALE—800 new metal spaced brood-frames, No. 2 stock, nailed and wired, at $3.00 per hundred or 400 for $11. Also 100 loose hanging brood-frames nailed, No. 2 stock, at $2.50. The M. C. Silsbee Co.,
Rt. 3, Cohocton, N. Y.

YOU run no risk in sending a dollar for the Beekeepers' Review for 1917, for the Editor has so much confidence in the correspondence he has secured to write for the Review during 1917, that he has decided to refund your money at the end of the year if you are not perfectly satisfied with the Review. Just say, "Kindly return my dollar, as I am not satisfied with the Review," and it will come back to you without questions being asked. Address,
The Beekeepers' Review, Northstar, Mich.

SITUATIONS.

WANTED—Experienced man to work with bees, April 15 to August 15.
C. C. Parsons & Son, Bluff Springs, Fla.

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American Bee Journal

HONEY AND BEESWAX

CHICAGO, Nov. 17.—Quite heavy receipts of comb honey have come on the market and it is slow of sale, or apparently so, on account of the quantity.

The best grades of white comb are bringing 13@15c per pound; off grades from 1@3c per pound less. Extracted is selling well and there is no excess of supplies. The best white grades are bringing 9c per pound, and those off in color or flavor are bringing 8c per pound. The best grades of light amber 7½@8c per pound with darker grades ranging from 6@7c per pound.

Beeswax, if free from sediment and good color 32c per pound. Dark grades 28@30c per pound.

R. A BURNETT & CO.

SAN ANTONIO, Nov. 15.—No bulk comb honey is being offered by producers, all stocks being practically cleaned up. Supplies of extracted honey are also about exhausted. No carload quantities are being offered. We have not had such a complete clean up of surplus honey in years. Prices to wholesale trade for choice honey rules at 8@9c basis. Fall honey flows did not materialize. Beeswax prices are firm, 27c cash to 30c exchange basis.

SOUTHWESTERN BEE CO.

KANSAS CITY, MO., Nov. 16.—Our market is very slow on comb honey, same selling around $2.75 to $3.00 for No. 1, and $2.50 to $2.65 for No. 2. Extracted honey is moving slowly at 8c a pound for amber and 9c a pound for white clover. Good No. 1 beeswax is selling at 25c a pound.

C. C. CLEMONS PRODUCE COMPANY.

DENVER, Colo., Nov. 10.—We are selling new crop comb honey in the local market at the following jobbing prices; Fancy, per case of 24 sections, $3.38. No. 1, $3.15; No. 2, $2.93. White extracted, 8½@8¾c per pound; light amber, 8@8¼c per pound, and amber 7@8c per pound. We pay 26c per pound in cash and 28c per pound in trade for clean, average yellow beeswax delivered here.

THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Mgr.*

CINCINNATI, Nov. 16.—The demand for comb honey is not as good as it was last season. We are selling No. 1 comb honey, 24 sections to the case, at $3.75 per case; lower grades are not wanted at any price. White clover extracted honey in 60-pound cans at 7½@9c. Amber extracted in barrels from 6½@7½c. The above are our selling prices, and we buy at less than the above prices.

We are paying 28c a pound for choice bright yellow beeswax.

THE FRED W. MUTH COMPANY.

NEW YORK, Nov. 18.—The new crop of honey from nearby is now beginning to arrive in small lots, but the market is still unsettled, and prices are not firmly established. We are of the opinion that comb honey will sell as follows:

Number 1 and fancy white, 14@15c; No. 2 and amber 12@13c; buckwheat and dark, 10@11c. Extracted white clover, 7@7½c; light amber, 6½@7c; buckwheat, 6½@7c, and West India honey continues to arrive quite freely and prices are ranging from 58@62c per gallon, according to quality.

Beeswax is selling at 30@31c for domestic and 28@29c for West India.

HILDRETH & SEGELKEN.

NOTICE TO SUBSCRIBERS

We are obliged to cancel many of our prices of combinations of the American Bee Journal with bee books. Those desiring to take advantage of the combination offers will please disregard former offers and order per the followng list, which gives postpaid prices for the United States. For Canada add 10 cents for yearly subscriptions and for foreign countries add 25 cents:

Books	*Price postpaid alone*	*With A B J 1 yr.*
Dr. Miller's "Thousand Answers" (ready March 1)		$1.75
Langstroth on the Honey Bee	$1.50	2.00
Doolittle's Scientific Queen-Rearing	.50	1.25
Bee Primer	.15	1.00
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